C A P I T A L F O R M A T I O N

I N I R A N

1900-1965

by

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Submitted for the degree of
Doctor of Philosophy (Economics),
University of London.
June 1969.

ABSTRACT OF THESIS

This thesis is intended as a contribution to the study of capital formation in the context of the Iranian economy. It begins by examining with reference to Iran the problems that arise in trying to use the internationally recommended concepts, definitions and methods of estimating capital formation. (Part 1, Chapters 2 and 3).

It goes on to analyse previous estimates of capital formation and to suggest ways of improving them. (Part 1, Chapter 4). Then follows my own estimate of Gross Domestic Fixed Capital Formation, which for the first time gives a consistent series from 1900, and an attempt to assess the reliability of this estimate. (Part 2, Chapters 5, 6, 7, 8, 9 and 10).

Finally, the thesis explores the possibilities of using this estimate to provide figures of capital formation for individual sectors of the economy. (Part 3, Chapter 11).

In the process of producing a new estimate of capital formation it proved necessary to construct other new statistical series, especially on population, which I hope will also prove useful.

ACKNOWLEDGEMENTS

* I would like to thank all the economists and statisticians, the bankers and demographers, the librarians and civil servants and my friends and acquaintances in both Britain and Iran for answering the many questions I put to each of them during the past four years.

* Particular thanks are due to

Professor Edith Penrose, my supervisor at the School of Oriental and African Studies in the University of London, for her advice, encouragement and critical comments during the preparation of this thesis.

The Department of Education and Science, for awarding me a Major State Studentship for three years and funds for field work in Iran.

The Addo Adding Machine Company, for providing me with a calculating machine at a nominal price to enable me to carry out my extensive statistical computations.

Mrs. Barbara Ellison, for typing the final draft of this study.

* My greatest debt is to my wife, Mehry. Without her unfailing support during the years I spent as a student this thesis would never have been written.

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PART ONE

CHAPTER ONE

INTRODUCTORY REVIEW

This thesis has four basic aims:

a. To analyse the internationally recommended concepts, definitions and methods of estimation of capital formation in the light of the situation of Iran - a country with a known deficiency of directly relevant statistical information.

b. To examine critically the existing estimates of capital formation in Iran - in particular the only official series of Gross Domestic Fixed Capital Formation estimates from 1959-1965 - and to suggest how these estimates may be improved.

c. To produce an original series of annual G.D.F.C.F. estimates for the years 1900-1965 as a contribution to the quantitative study of the Iranian economy in the 20th century.

d. To discover whether the annual aggregate estimates can be utilized to provide reliable capital formation figures for the major sectors of the economy.

The contribution of this thesis to the study of capital formation and to the study of the Iranian economy is, however, rather more than the achievement of these four aims. For in the process of producing annual G.D.F.C.F. estimates it has been necessary to calculate new series of data on the population of Iran, the urban/rural breakdown of population and the wholesale price

index as well as original estimates of other variables such as the life-span of dwellings, the efficiency of customs duty collection and the degree of reliability of all statistics used.

Though the present study is complete in itself, the research involved and the results obtained are intended to provide the basis for the production of a quantitative history of the Iranian economy in the 20th century. This longer-term project is being continued at the University of Durham.

Work on this dissertation has taken just over three years (October 1965 to January 1969), of which one year was spent on field research in Iran. The examination of source material in Britain and Iran took approximately 26 months; the extraction, compilation and calculation of statistical data approximately six months; and the drafting and writing of the dissertation a further eight months. Fluency in Persian had previously been achieved during three years residence in Iran from 1959-1962, during which time acquaintance was made with many of the economists and officials who later co-operated with my research work.

Sources and Statistics

The amount of published material on the Iranian economy is minimal, and extensive reading of the many general books about the country failed to produce more than a few snippets

of relevant information. However, a large number of unpublished papers in Persian, French or English were traced with the co-operation of the British and Iranian authorities. In addition, permission was obtained from the Iranian Prime Minister, Amir Abbas Hoveyda[1], to examine all relevant economic reports of United Nations and other advisers, most of which remain classified as 'confidential' or 'restricted'. A complete list of all sources used in this dissertation is given in the Bibliography with an indication of their general availability.

A considerable amount of information was also obtained from personal interviews with officials, research workers, economists, statisticians and businessmen. Where permission was granted, the full name and position of the informant is given together with the date of the interview. In a few cases, however, informants expressly requested that they remain anonymous. In accordance with such requests, the informants concerned are described in general terms such as 'importing merchant', 'senior official', etc., although the interview date is correctly given.

Though significant improvements have been made in the mid 1960s,[2] Iranian statistics have, in general, been criticised by almost every writer who has taken Iran as a subject for discussion.[3] There are certainly valid reasons for such criticism,[4] yet these have rarely been

made clear. No attempts have so far been made to evaluate the degree of reliability of existing data in quantitative terms or to produce alternative figures. Official estimates have never been cross-checked by use of alternative methodology of even the crudest type.[5] Indeed, most authors continue to use the same statistics they have criticised to illustrate their own discussion. Consequently, there tends to be a 'consolidation effect', by which someone's guess at the size of a variable is quoted by an official, is then regarded as an 'official estimate', and is later accepted as reliable by all students. One prime example of this process is found in the population total of 15,055,000, guessed by a statistician in the early 1930s, which became officially and even internationally recognised as reliable for all years up to 1949, even though it was known that the population was growing during this period.[6]

Attempts are made in this study to examine the reliability of all statistics used - if only on a subjective basis due to the general impossibility of making objective checks. Where necessary, figures are amended or reworked. It is to be hoped that none of the statistics given here will themselves become subject to the 'consolidation effect' or used without reference to the degree of reliability attributed to them.

Outline of Study

The study is presented in four parts. Apart from the introductory review, Part I includes, in Chapter 2, a discussion of the concepts, definitions and classifications of capital formation, together with their relevance both to the Iranian situation and to the aims of this study. Although the recommendations of the United Nations and other organizations,[7] made to ensure international comparability of estimates, are considered to be applicable in many cases, data deficiencies require a number of adjustments to be made.

In Chapter 3, seven different methods of estimating capital formation are examined. It is found that, contrary to the general recommendations of the United Nations, different components of G.D.F.C.F. often require different methods of estimation, and that for Iran (and probably for many other developing countries) the vagaries of data are such that reliable capital formation estimates can only be made by a combination of methods. The argument that there is a danger of double-counting in this process is considered to have been exaggerated.

All existing estimates of capital formation in Iran, whether dealing with aggregate G.D.F.C.F. or only some aspects of it, are appraised in Chapter 4. Without exception these estimates are found to understate the

true position and detailed explanations are given for this. It is shown that the latest official estimates of the Bank Markazi Iran from 1959-1965[8] are subject to a number of serious quantitative and qualitative deficiencies, and suggestions are made as to how these may be remedied.

Original estimates of G.D.F.C.F. for the period 1900-1965, in both current and constant (1965) rials, are presented in Part II. Chapter 5 discusses the results in aggregate and it is shown how the various rises and falls in the level and rate of growth of capital formation can be explained by known historical events. The make-up of G.D.F.C.F. over time is also discussed in this chapter. Although no generalization can be made about the relative importance of the major components of capital formation in periods of growth, low-level and declining periods are found to be marked by a large proportion of 'traditional' capital formation in relation to the 'modern' type. Results for each of the four major components of G.D.F.C.F. are then discussed in turn in relation to what is known of the history of the economy.

Expenditure on imports of capital goods is estimated in Chapter 6, and detailed accounts are given of the assumptions made or implied, the difficulties faced and the methods used in choosing 'potential capital goods',[9] and

in converting c.i.f. values to market values. It is shown that, for the period under study, exports of 'potential capital goods' have been insignificant. Chapter 7 includes estimates of expenditure on domestically produced machinery plant and equipment. A distinction is made between 'modern' and 'traditional' capital goods,[10] and it is found that, although expenditure on the latter type has always exceeded expenditure on the former, it has consistently been omitted from existing capital formation estimates.

Discussion of expenditures on construction and works is divided between two chapters. Chapter 8 deals with residential housing, and estimates for both rural and urban areas are built up from new data on population, population growth, urban/rural division of population and a series of other variables. For the years 1960-1965 use is made of a new official survey of private urban construction which is found, on close examination, to be of very good reliability. The modern/traditional distinction is carried over into the discussion of housing also. Chapter 9 includes estimates of expenditure on all types of capital goods not included in Chapters 6, 7 and 8. A variety of direct and indirect methods is employed and the results are given in 13 tables.

In Chapter 10, detailed discussion is made of the

probable margin of error in the results of Part II. For the period 1900-1959, it is estimated that the annual figures are only accurate to within 40 per cent of the true figures. The totals for 1960-1965 are more reliable and probably lie within 30 per cent. It is thought that annual estimates with a degree of reliability of less than ± 20 per cent cannot be obtained for Iran even with the recommended improvements in methodology suggested here. However, the trends of the aggregate series, as shown by their correspondence with historical data, are considered to be reliable.

Part III, comprising Chapter 11, is devoted to discovering whether meaningful estimates of capital formation can be made for the 11 major sectors of the economy. The general conclusion is that such sectoral estimates cannot be made with any degree of reliability from the aggregate series. This is partly because of the margin of error in the aggregate series, but also hinges on the fact that arbitrary assumptions about the end-use of capital goods or the importance of individual sectors in the economy must be employed. It is considered that the build-up of sectoral estimates should be made independently of the aggregate estimates by use of alternative methodology. These would then serve as a valuable check on the aggregate totals. This, however, cannot be done because of data

deficiencies, although a number of results pertaining to some sectors are given in this chapter, together with a qualitative discussion of the other sectors.

Part IV consists of the Bibliography and seven appendices. Each of these appendices is the result of original research and they are all utilized in the first three parts of this study. Appendix A (since published)[11] includes annual estimates of the population of Iran from 1900-1966. It shows how the population has grown from around 10 million to 27 million in the 66 years. Appendix B provides an estimate of the urban population of the country in 1900 by towns. This was built up from scattered reports and is used to discover the urban/rural breakdown of population at the turn of the century. Appendix C gives a complete list of the tariff numbers used in the estimation of imports of capital goods for each of the ten different tariff classifications used between 1900 and 1965, while Appendix D makes a comparison between these tariff numbers for 1965 and the deficient set used by the Bank Markazi Iran.

In Appendix E a study is made of the efficiency of the Customs Duty and Commercial Tax for 1965, based on reports of amounts collected as compared with amounts which should have been collected. It is found that only about 85 per cent of port taxes were collected in 1965.

Appendix F attempts to plug a gap often ignored by other students - that of the imports of goods exempt from duty in the period 1900-1927. This is done by a combination of data from the annual accounts of the Anglo-Persian Oil Company and an assumed relation between non-exempt imports and non-A.P.O.C. exempt imports.

A Wholesale Price Index (1965 = 100) is constructed in Appendix G. It combines three existing indices for parts of the period 1900-1965 and uses historical reports to interpolate figures for missing years.

My article 'Banking and Economic Development in Iran', published in the Bankers Magazine, constitutes Appendix H. The article traces the history of banking in Iran and grew out of research for this thesis.

Notes

1. Memo from the Prime Minister to the Plan Organization and the United Nations Headquarters in Tehran, March 6, 1967.

2. This particularly applies to the various statistics of the Bank Markazi Iran. See Bharier, J., 'Banking in Iran', in Financial Times World Banking Survey, May 1967.

3. For a recent tirade against Iranian statistics, see Benedick, R.E., 'Industrial Finance in Iran', Boston, 1964, p. 258.

4. Many of these reasons are given later in this study as the individual statistics are discussed.

5. However, see report of an abortive post-enumeration survey of the most recent population census of Iran in Appendix A. Apparent cross-checks of figures for Gross National Product are invalid because, though different methodology is used, the basic sources are identical. See Homayoon, B., 'National Income of Iran, 1959-1961, Tehran, 1964, p.1.

6. See relevant discussion in Appendix A.

7. United Nations, 'Concepts and Definitions of Capital Formation', Studies in Methods, Series F, No.3, New York, 1954, for example.

8. Bank Markazi Iran, Economic Research Department, 'National Income of Iran, 1959-1965', Tehran, 1968.

9. 'Potential capital goods' are defined in Chapter 6.

10. 'Modern' and 'traditional' goods are defined in Chapters 7 and 8.

11. Bharier, J., 'A Note on the Population of Iran, 1900-1966', in Population Studies, July 1968.

C H A P T E R T W O

CONCEPTS AND DEFINITIONS

The concepts and definitions of capital formation used in this study follow, for the most part, the recommendations of international bodies, in particular those of the United Nations (U.N.).[1] Divergences from these recommendations are due to the unavailability of necessary data and to the inapplicability of the recommendations themselves with regard to the aims of this dissertation or to the methods of estimation used.

For purposes of international comparisons and to enable consistent estimates of Gross National Expenditure to be built up later by other students it is clearly necessary to follow the published, and now generally accepted, recommendations. But this does not imply that these recommendations must be accepted without reservation, as, for example, Hashim has done,[2] or that they are entirely satisfactory as approximations to theoretical or logical requirements. Indeed, during the discussion of this chapter a number of faults are noted.

There is no reason in theory why concepts and definitions of capital formation should have to be any different for a developing country such as Iran than for an advanced country. In practice, however, the recommended system of concepts and definitions is built up as a compromise between the different uses to which the estimates are put, the statistical resources available, and considerations of measure-

ment.[3] And it is found that this compromise is based rather more on the requirements and resources of advanced economies than on those of the less-advanced.

Consequently, not only are the major aspects of capital formation discussed in this chapter. Attempts are also made to highlight the chief difficulties in producing a standardized system of concepts and definitions, and in following such a system in Iran. All divergences and omissions from the international recommendations are described, and estimates are made of their significance. It must be noted that in none of the existing estimates of capital formation in Iran (these are discussed in Chapter 4) has any detailed description of concepts and definitions been given.

The Scope of Capital Formation

The U.N. recommends that the concept of capital formation be limited in scope to increases in physical assets, net changes in stocks, and durable improvements to land.[4] Valuation difficulties rather than theoretical preferences preclude the inclusion of such tangible assets as education and health standards, such intangible accountancy assets as patents and goodwill, and other items of wealth such as works of art, museum inventories and collectors' pieces.[5] Similar practical considerations exclude the discovery of sub-soil resources, as well as other development activities,

when these do not result in the acquisition or construction of physical assets. The direct and indirect costs of financing capital formation are also omitted because of data scarcity and because the different financing methods of different enterprises leads to problems in producing consistent results. (Whereas some firms finance capital formation from their own profits, others borrow from individuals, banks or a capital market.)[6]

Although these recommendations trim the 'ideal', wide scope of capital formation to a narrower, physical concept, they are followed as far as possible here. In the first place, the intrinsic value of a 'physical' series of capital formation estimates is generally recognized,[7] and the comparison (made in Chapter 5) of Part II results with known historical data substantiates this view. And secondly, there is no evidence to suggest that the above-mentioned empirical difficulties can be overcome in the Iranian context. Indeed, the necessary data are, for the most part, non-existent.[8]

It must be noted, however, that statistical gaps on stocks limit the recommended physical concept still further.

Treatment of Stocks

The U.N. includes in its concept of net changes in stocks changes in farm stocks such as grain and livestock, the value of physical change in stocks of raw materials,

work-in-progress, finished goods in the hands of private and public enterprises, government stockpiles, stocks in the hands of marketing authorities, strategic materials and agricultural surpluses.[9] But because of data limitations it is not possible to include here an annual estimate of these stock changes.

Changes in the stocks of machinery, plant and equipment, and their spare parts, are, however, automatically included in the estimates of capital formation because the methods of estimation employed make it impossible to separate them out from the flow of these fixed assets to final users.[10]

The inclusion, in the U.N. recommendations, of net changes in livestock holdings with other stock changes has been critised by Stuvel who rightly states that, on almost all definitions of fixed assets, livestock would have to be regarded as a fixed asset.[11] In most advanced countries, where animals are mainly reared for their food and hide content, and where data on stocks of all types are more readily available, Stuvel's criticism has little significance for overall capital formation estimates. In Iran, however, animals are also used for draught power and transportation,[12] and in this case the criticism carries more weight; by excluding estimates of net stock changes, one important type of fixed asset is excluded. In this

study, therefore, net changes in livestock holdings, though not included in the totals of Part II, are estimated and discussed separately in Chapter 11.

The U.N. suggests that government holdings of stocks are usually small,[13] and Clark has suggested that, as a secular form of capital formation, an increase in stocks is probably not important.[14] However, a study by Hooley shows that in developing countries expenditure on stock increases is of greater significance in relation to expenditure on fixed assets.[15]

But the true importance of stock changes in Iran between 1900-1965 is difficult to assess. Data about commercial bank advances or from the accounts of enterprises and government are non-existent. And the few available statistics do not provide representative information over a reasonable number of years. A statistical series on the ratio between stocks and monthly sales of 25 products was started by the Ministry of Economy in 1962, but no discernible overall trend has been found.[16] Similarly, rough figures on the annual volume of cotton stocks between 1933-1963 indicate that there has been no long-term rise in the level of such stocks.[17]

It is likely, therefore, that in the period under study, net increases in stocks have not been significant, and that their exclusion from the concept of capital form-

ation here will not affect the conclusions reached in Chapter 5. By excluding changes in stock holdings, the U.N. concept of capital formation has thus been narrowed down to Fixed Capital Formation.

Definition of Capital Goods

Capital Goods (also known as fixed assets or physical assets) are defined by the O.E.E.C. as 'all durable producer's goods with an expected average life of more than one year'.[18] This is similar to the definitions used by other writers[19] and to that employed by the U.N.[20]

The life-span criterion for defining a capital good, whether referring to one year or to a longer period such as the three years used by Kuznets[21] and by Rosovsky,[22] is somewhat arbitrary. For the life of an asset depends on how intensively it is employed and on the extent to which expenditures on repairs and maintenance are relevant to its longevity. The argument for use of this criterion appears to be based on an unsubstantiated notion of how business accountants allocate purchases to a depreciation account, and this is a point on which there is no uniformity.[23] A preferable definition, though one which in practice may make little difference to the choice of capital goods, is one which replaces the life-span criterion with the notion of repetitive use in a productive process.

The U.N. recommends that, for purposes of internation-

al consistency, the small capital goods which are often arbitrarily excluded from capital formation estimates (such as hand tools and motor tyres) should be included wherever possible.[24] This recommendation is consistent with a strict 'one-year-life' criterion, which is accepted here both because it approximates the repetitive-use criterion and because it is practical for most of the sources of data and methods of estimation used in Part II.

Producer and Non-Producer Sectors

Practical expediency, and the need to ensure that the concept of capital formation is consistent with other National Accounting concepts, rules out from Fixed Capital Formation (as defined by the U.N.) all capital goods purchased by households. Residential dwellings, however, are conventionally included in the scope of the estimates. This is because imputed rents from residential dwellings are usually included in the National Accounts of most countries.[25] Both these recommendations are followed here for the same reasons.

Furthermore, an arbitrary compromise is made between the two extremes of treating the government wholly as a consumer or wholly as a producer in that all expenditures of an entirely military nature are excluded from the estimates of capital formation.[26] This compromise avoids the valuation problems which arise when, for example,

government buildings, roads or railways are used jointly for both civilian and military purposes.[27]

Thus the word 'producer', as it appears in the definition of capital goods, refers not only to all forms of private or public enterprise, but also to individuals as house-owners[28] and the civilian and joint civilian-military sections of central and local government. Non-profit institutions are also classed as producers.[29]

There is little logic in this definition of a producer, and many objections have been made to it. Kuznets, for example, states that military equipment 'is analagous to a variety of protective capital goods included under business capital formation; there seems to be no good reason for excluding munitions while including fences (and, for that matter, business structures which provide protection from the weather)';[30] Stuvel suggests that the boundary between households and producers becomes extremely dubious when those durable commodities such as houses, cars and cookers, which can be owned or rented, are taken into account. He cannot see why houses and cars should be treated differently.[31] The definition has also come under attack on practical grounds. Rosovsky, for example, states that 'it would not be possible to understand the process of Japanese industrialization if military demands for construction and equipment were arbitrarily eliminated'.[32]

Nevertheless, the definition is one which is practical in most cases. Moreover, it is shown later to be highly relevant to the study of capital formation activity in the Iranian economy.[33] The losses through illogicality are more than offset by these gains.

It is inevitable that anomalies and arguable borderline cases should arise when such an arbitrary distinction between a producer sector and a non-producer sector is made. Not only must the flow of 'potential' capital goods[34] be allocated between the two sectors - often, again, in arbitrary fashion - but once an asset is allocated to the non-producer sector it is assumed to be 'consumed', thus leading to valuation difficulties if it is later sold to the producer sector.[35] These anomalies can, of course, be avoided by dropping the arbitrary division of the economy into two sectors. Yet this is not usually consistent either with the purposes for which capital formation estimates are required, or with other National Accounting concepts. For the most part, therefore, subjective judgments must be made about the classification of ambiguous cases.

Capital Formation Where?

Since the U.N. states that its concept of capital formation is designed to measure changes in the physical capacity of a country's economy, net changes in foreign

investment are automatically excluded.[36]

Moreover, as the spatial limits of a country's economy are basically defined by its political boundaries,[37] almost all capital goods entering into the estimates of capital formation will actually be present in the country. The only fixed assets which may not be physically within the geographical borders of the country are small movable assets and international transport carriers.[38] Neither of these two is significant in the case of Iran.[39]

Restricted in this way, the U.N. concept is called Domestic Fixed Capital Formation.

It must be noted that capital formation by enclave industries in a developing country, such as the expatriate oil industry of Iran, are also included in the above concept although for some purposes, such as the estimation of capital-output ratios for indigenous industry, this may not be desirable. However, no separate treatment of enclave industries is made in this study.

Second-Hand Capital Goods

Apart from expenditure on newly-produced indigenous capital goods, the recommended concept of Domestic Fixed Capital Formation includes net imports of both new and second hand fixed assets.[40]

However, the U.N. recommendations on second hand capital goods purchased within the country of study are

not specific. It is suggested that the transfer of capital goods between civil and military agencies of government should be ignored as there is an admitted difficulty in distinguishing a borderline between the two agencies. And it is also stated that inter-industry transfers of capital goods (and the costs of such transfers) should be included.[41] But no comment is made on transfers between the producer and non-producer sectors of the economy, although account should be taken of these in all estimates.

In this study, expenditure on all domestic transfers of capital goods is omitted because of a lack of necessary data. The significance of the omission of sales and purchases of second hand capital goods within Iran, and their costs of transfer, can be gauged from the following statistics for 1962.[42] Approximately 4.5 per cent of the value of all fixed assets purchased by manufacturing establishments in 1962 were second hand. Sales of second hand assets from these establishments were about 19.0 per cent of all asset purchases, although it is likely that most of these went to industries which did not have an establishment form, such as household industries, or to producer sectors other than manufacturing.[43] Of the second hand assets bought, 44 per cent went to the transport industry and 25 per cent to the food-processing industry, suggesting

that these assets were originally in the hands of non-producers. (The assets would probably be motor cars, and ovens or refrigerators.) But these two industries also accounted for 55 per cent of asset sales, thus indicating that transfers between producer and non-producer sectors are not just in one direction.

The above figures indicate that net purchases of second hand capital goods by producers from the non-producer sector are not of great significance. However, the fact that such transfers do take place implies that if they are excluded there is an underestimation of capital formation by the amount of the annual aggregated transfer charges. No generalization can be made about the level of these charges, but if it assumed that they amount to approximately one per cent of the value of assets transferred,[44] it can be seen that the overall effect on annual capital formation estimates is of no importance when the margin of error of these estimates is taken into account.[45]

There are two possible methods of obtaining data on asset transfer charges. The first, an indirect method, is through information about the average level of such charges and the number of annual transactions involved. The second, a direct mthod, is by extending the Expenditure-Survey method[46] of estimating capital formation to cover details of second hand assets. Neither of these

is presently possible in Iran. Indeed, both methods are more suited to the statistical resources of advanced countries than to those of the less-advanced.

Spare Parts, Repairs and Maintenance

The definition of capital goods may be interpreted to include parts of plant, machinery, vehicles and equipment which have an expected average life of one year or more.[47] These parts may be used as spares or replacements for worn-out parts of existing assets; they may be used in assembly plants; or they may, during the accounting period, just be additions to the stocks of parts held in the country.

The allocation of parts between these uses is impossible in Iran with the available data. Indeed, for the most part an accurate separation of expenditure on capital goods and the parts for these goods is not even possible; nor is a distinction between parts with a life of less than one year and those with a life of more than a year. The U.N. recognizes these difficulties, and to avoid them it recommends acceptance of business accountants' figures.[48]

But this is just a process of buck-passing. It does not help to solve the problem, and even if it did it would only be tenable in countries where the Balance-Sheet method of estimating capital formation[49] can be used. For Iran, where business accountancy is generally of the

crudest nature, the recommendation is irrelevant.

Not all students accept the inclusion of spare parts in capital formation estimates.[50] In this study, however, all parts, of whatever life-span, which cannot be separated from the capital goods to which they refer, are included. One argument in support of this process is that if the parts are included in the statistics with capital goods they must be important enough to be recognized as part of these capital goods.[51] Parts which are not included are those which are made of different material to the capital good (such as leather, rubber, textile, glass or asbestos parts of metal machinery), and those which are 'unworked'. These exclusions are made because of the way in which the basic data are compiled,[52] but they also tend to comply with the recommended definition of capital goods.

Double-counting of expenditure on parts, which may arise by including both the output of the assembly industry and the constituent parts of this output, is avoided by adjusting the volume and value of the output of assembled capital goods rather than the flow of parts.[53] This is less arbitrary, and therefore to be preferred, than the latter method, which is used in the official Iranian estimates.[54]

The U.N. recommends that 'all alterations or repairs which alter the services originally provided by the struct-

ure', (i.e. of private dwellings and other buildings and works) should be included in the concept of capital formation.[55] But there appears to be no agreement between economists and statisticians of different countries as to the desirability of the inclusion of these items. All the Scandinavian countries include them while most other advanced nations exclude them.[56] In developing countries the decision is usually made with reference to available data.

In Iran, empirical difficulties force the exclusion of expenditure on all repairs, maintenance and alteration work. For private construction in urban areas (the only type of construction for which any data are available) this would appear to be a serious omission from the recommended concepts. It is estimated that, in 1963, expenditures on additions and alterations to existing buildings amounted to 43 per cent of the value of totally new construction. And expenditure on repairs and maintenance was equivalent to 39 per cent.[57] However, because of the indirect methods of estimation used here, it is judged that these exclusions will have no significant effect on calculated capital formation trends.[58]

Work-in-progress

Some capital goods, particularly large-scale construction and works such as hydro-electric dams, roads

and multi-storey buildings, may be constructed over a number of accounting periods. To avoid the artificial 'bunching' of capital formation which would occur if all expenditure over a number of years were allocated to the year of completion, the U.N. recommends two methods of calculation.[59] The first, and the most appropriate from the viewpoint of the economist, is to allocate the cost of the capital good to the various accounting periods according to value-in-place. The second is to base calculations on payments due to contractors. But both of these recommendations imply the use of accounting data, which, for developing countries, are generally unavailable.

In Iran, for example, it is possible to follow the recommendations only for large-scale assets purchased by the oil companies which produce detailed accounts,[60] or by government agencies for which Budgets are prepared.[61] All other assets are assumed to be purchased or constructed within one year. It is good fortune rather than deliberate choice of data that most Iranian large-scale capital goods belong to these two sets of organizations, and that the U.N. suggestions can be complied with. Apart from work on construction of various types, the U.N. includes in work-in-progress work on heavy equipment such as ships.[62] No equipment of this type has been built in Iran.[63]

Units of Measurement

Capital formation may be measured in terms of units of each type of capital good; by weight, or other physical attribute such as horse-power, of each type of asset; or by the cost of assets measured in current or constant prices, at factor cost or market value. By use of appropriate conversion factors, it may also be possible to translate one type of unit into another.

The U.N. implies that market prices should be used as a measure,[64] but the relevance of this measure depends on the use to which capital formation estimates are to be put, and the availability of data.[65] In this study aggregate figures are given in both market prices and at factor cost, with all other figures at market prices.

Where the physical differences between capital goods of the same type are small (such as 'traditional' types of dwellings) it is convenient to estimate the basic figures on a unit basis. These can then be multiplied by the relevant average prices to provide a final estimate in money values.

Where the fixed assets are imported, the available data allow volume and value measures to be used for most years, and estimates based on both of these are presented in Chapter 6. Domestically produced or constructed capital goods, other than those mentioned above, are all

estimated in value terms. When an estimate has been made in an indirect manner all stages in the calculation process are shown.

The monetary unit used in this study is the Iranian rial,[66] which has been in existence in its present form since 1932. In that year it replaced the kran to which it is exactly equivalent.[67]

For some purposes, such as productivity analysis or the measurement of output in real terms, estimates of capital formation over time need to be adjusted to take account of the changing prices of capital goods. For other purposes, such as investment decision analysis or measurement of output in money terms, such an adjustment may be irrelevant. Ideally two series of data should be given.

Unfortunately, it has not been possible to produce estimates of capital formation in constant prices here as no relevant deflators are available. Nor has it been possible to construct a suitable deflator due to the lack of adequate information about unit prices and technological changes in each type of capital good.

However, since in the period under study, there have been massive bouts of inflation in Iran - amounting to hyper-inflation in the late 1930s and early 1940s - it is necessary to use a general domestic currency deflator to offset the considerable changes in the value of the rial (kran).

Consequently, estimates are presented here in both 'current rials' and 'constant (1965) rials'. The 'constant rial' estimates are calculated by means of a Wholesale Price Index, which is described and presented in Appendix G. It must be stressed that the estimates in 'constant rials' are not intended to be equivalent to estimates in constant prices as they only counteract the distortions in domestic money values caused by internal inflation. They do not offset 'real' changes in the unit values of capital goods.

All volume figures are given in kilograms, which have been used in Iran since 1935.[68] Figures which, for previous years were given in mans (batmans), have been converted to kilograms at the appropriate rate.[69]

The Market Value of Capital Goods

The market value of capital goods is defined by the U.N. to include the ex-factory or c.i.f. price, plus such expenses as those for transportation, brokerage and installation; engineering, architects, legal and other fees; and indirect taxes.[70]

One immediate problem that arises is how to ensure that all capital goods values consistently include all these items. In this study, the c.i.f. prices of imported capital goods are assumed to be consistently measured and compiled by the authorities. They, and the relevant customs duties and freight charges, are obtainable from

published sources. Estimates based on interviews, reports and secondary sources are made for distributors' mark-ups, installation costs and all other expenses, and the results are presented in such a way as to enable adjustments to be made when more detailed or accurate data are available.[71] Domestic production of machinery, plant and equipment is treated in a similar way.[72]

Where methods of estimation other than the Flow of Capital Goods method[73] are used here, such as for expenditure on all types of building and works, it is assumed that these capital goods are priced inclusive of all the elements which make up market value. However, there is no way of determining how realistic this assumption is. This difficulty can only be overcome by ensuring that the definition of market value is strictly adhered to, and there is no evidence that this has been done in any existing estimate for any country.[74]

The Time of Measurement

The U.N. recommends a rule of 'recording transactions at the time when the transaction is recorded as a liability or an asset'.[75] Stuvel similarly suggests that transactions should be recorded 'when there is a change of ownership of the goods involved in the transaction'.[76]

Both these recommendations imply a method of estimating capital formation in which such information is

readily available, and both appear to be inconsistent with the definition of market value given above. For if, for example, ownership of an imported capital good changes, and this change is recorded, on clearance from customs, the charges other than the c.i.f. value which make up market value must also be included at that time. But these may not be known until some considerable time later.

In fact, the choice of all possible times at which the transaction can be measured - from the time of placing the order to the time when the asset is actually installed and ready to participate in the productive process - is necessarily arbitrary. And where the interval between the time of placing the order and the time of installation covers a number of accounting periods, the choice will affect the annual estimates of capital formation.

The most consistent point of time for measuring capital formation, and the one which is used here, is the time at which capital goods are installed and/or ready for production. This is because, in the first place, it accords with the definition of market value, and in the second place it is the most relevant time from the point of view of the economist. Before the item is installed it is only an addition to the stock of unused capital goods in the country, and even the U.N. recommends that additions to this stock should be measured separately from

new capital goods in use.[77]

Measurement of capital formation when capital goods are completely installed implies that all statistics which are measured at an earlier point of time (e.g. the time of customs clearance for imported assets) must be adjusted to take account of the time-lag before installation (e.g. the time between customs clearance and installation). In this study this cannot be done because of lack of data on installation delays. Surveys are necessary before it will be possible to adjust the totals given here, and until these are carried out it can only be assumed that such delays do not significantly affect the totals or the trends of these totals.

Gross and Net Capital Formation

Gross Domestic Fixed Capital Formation (G.D.F.C.F.) is defined as additions to the stock of installed capital goods by resident producers, each of these terms having been defined above. Net Domestic Fixed Capital Formation is defined as additions to the stock of installed capital goods by resident producers after allowances have been made for depreciation, obsolescence and accidental damage to existing capital goods. The difference between the gross and the net concepts is termed 'capital consumption'.

Denison has rightly stated that 'if capital consumption can be measured, there is a strong interest in its measure-

ment, academically and policy-wise'.[78] This is because it is useful to know, at the macro level, what proportion of G.N.P. or G.D.F.C.F. is needed to keep the capital stock of an economy intact, and, at the micro level, what part of business expenditure on fixed assets represents replacement expenditure. But the difficulties of estimating capital consumption in even the most statistically advanced countries of the world are well documented.[79] Firstly, the difference between the gross and net concepts of capital formation is now generally considered to be an inherently arbitrary measurement when capital formation is measured in value terms. And secondly, even if arbitrary criteria are used, capital consumption is extremely difficult to measure consistently mainly because of problems of quality change. Indeed, for the most part, it is not possible to estimate N.D.F.C.F. independently of G.D.F.C.F.[80]

The measurement of capital consumption in Iran is impracticable because none of the necessary data is available[81] and because of the fact that the scrapping of assets tends to be countermanded by their transformation into new assets of different types.[82]

The accountant's concept of capital consumption is used in some studies as an approximation to the economic concept as it is alleged to have the advantage of 'reflecting current business practice'.[83] But even were this true,[84]

the situation in Iran is that the practice of depreciation accountancy is confined to a small number of sophisticated enterprises which are certainly not representative of all enterprises in the producer sector.[85] Moreover, all house-owners tend to ignore the depreciation of their assets even if they keep accounts.[86]

Classification of Capital Formation

The U.N. recommends a three-way classification of G.D.F.C.F. - by structure, by industrial use, and by type of fixed asset.[87]

Classification by structure involves allocating capital goods (split into buildings and other construction, and machinery and equipment) between i) Private enterprises and non-profit organizations; ii) Public enterprises; and iii) General government. It is not possible to follow this breakdown in a meaningful way here because of the way in which the basic data are compiled, and because of the methods of estimation used. The Bank Markazi Iran (Central Bank of Iran), in its official series,[88] does attempt to use this kind of classification, but, as noted in Chapter 4, the results it produces are misleading.[89]

Nor is it possible to follow the classification by industrial use as recommended by the U.N. in the International Standard Industrial Classification.[90] The same two reasons apply in this case also. However, some results

pertaining to the 11 sectors of the I.S.I.C. have been independently estimated and these are given in Part III of this study. There is no merit or value in allocating aggregate G.D.F.C.F. between the 11 sectors by means of arbitrary percentages as some students have done.[91]

Classification by type of asset involves the division of total fixed assets into i) dwellings; ii) non-residential buildings; iii) other construction and works; iv) transport equipment; v) machinery and other equipment. An adaptation of this classification is used in this study in that total fixed assets are divided into i) imported capital goods; ii) domestically produced machinery, plant and equipment of all types; iii) dwellings; and iv) all other building, construction and works. Again it is the arrangement of basic data and the methods of estimation employed which lead to this adaptation. But the fact that the official estimates of many developing countries other than Iran use the same types of data and methods[92] implies that this adapted classification is generally more useful and practicable than the one recommended by the U.N.

The U.N. defines each of its five asset types in terms of their constituent parts.[93] However the list of these parts can easily be adjusted to fit into the four-way asset division used here, so that no major changes in definitions need be made. The sum total of parts will, of course,

remain exactly the same except for the modifications mentioned earlier in this chapter.

Notes

1. United Nations, Statistical Office, 'Concepts and Definitions of Capital Formation', Studies in Methods, Series F, No.3, 1953. Also Organization for European Economic Co-operation (O.E.E.C.), 'A Standardized System of National Accounts', Paris, 1952.

2. Hashim, J.M., 'Capital Formation in Iraq, 1957-1962', London University Ph.D. thesis, unpublished, 1966, pp.85 ff.

3. U.N., op. cit., p.7.

4. Ibid., pp.8 ff.

5. Ibid., p.8; See also Stuvel, G., 'Systems of Social Accounts', Oxford, 1965, p.206.

6. U.N., op. cit., p.8; Stuvel, G., op. cit., p.205.

7. Ruggles, R. and N., 'Concepts of Real Capital Stocks and Services', in National Bureau of Economic Research (N.B.E.R.), 'Output, Input and Productivity Measurement', 1961, p.396.

8. There is no evidence that the museums of Iran contain significant amounts of wealth; and scant data about improvements in health and education standards over the 65 years suggest that these have been insignificant relatively to aggregate G.D.F.C.F.

9. U.N., op. cit., pp.18 ff.

10. On this point see Ramamurti, B., and Pedersen, H.T., 'Statistical Methods of Estimating Capital Formation Expenditure in ECAFE Countries', in 'Asian Studies in Income and Wealth', London, 1965, p.119.

11. Stuvel, G., op. cit., pp.206-207.

12. Lambton, A.K.S., 'Landlord and Peasant in Persia', 1953, pp.359-366; Also Iran, Ministry of Interior, Department of Public Statistics, 'First National Census of Agriculture', National Summary Report, Tehran, undated (1962?), p.45.

13. U.N., op. cit., p.14.

14. Clark, C., 'Investment in Fixed Capital in Great

Britain', Royal Economic Society Memo No.49, 1934, p.3.

15. Hooley, R.W., 'The Measurement of Capital Formation in Underdeveloped Countries', in The Review of Economics and Statistics, July, 1967, pp.199-201.

16. Iran, Ministry of Economy, General Department of Industrial and Mining Statistics, 'Report on the Results of the Annual Industrial Survey of Iran', Tehran, for 1963, 1964 and 1965 (published in 1966, 1967 and 1968).

17. Minyard, J.D., 'Cotton in Iran', United States Department of Agriculture, FAS-M-160, Washington, 1964, p.16.

18. O.E.E.C., op. cit., p.67.

19. For example, Aukrust, O. and Bjerke, J., 'Real Capital and Economic Growth in Norway, 1900-1956', in 'The Measurement of National Wealth', Income and Wealth Series 8, 1959, p.81; Also Maddison, A., 'Economic Growth in the West', London, 1964, p.80.

20. U.N., op. cit., pp.12-13.

21. Kuznets, S., 'Commodity Flow and Capital Formation', Vol. 1, N.B.E.R., New York, 1938, p.6.

22. Rosovsky, H., 'Capital Formation in Japan, 1868-1940', Glencoe, 1961, p.178.

23. May, G.O., 'Changes in the Accounting Treatment of Capital Items during the last Fifty Years', in N.B.E.R., 'Problems of Capital Formation', New York, 1957, pp.194 ff.; Stuvel, G., (op. cit. p.203) shows how items with an expected life of less than one year may still be allocated to capital account.

24. U.N., op. cit., p.13.

25. Ibid., p.17. But see also Stolper, W.F., in 'Studies in Social and Financial Accounting', Income and Wealth Series 9, 1961, p.200.

26. Stuvel, G., op. cit., p.205.

27. See Ramamurti, B., and Pedersen, H.T., op. cit., p.111.

28. The U.N. includes individuals as house-owners in the

'producer' concept by treating the ownership of dwellings as a business enterprise. U.N., op. cit., p.17.

29. Ibid., p.9. Private non-profit institutions are defined to include associations organized to provide a collective method for the consumption of goods and services by both households and businesses.

30. Kuznets, S., 'International Differences in Capital Formation and Financing', in N.B.E.R., 'Capital Formation and Economic Growth', 1955, p.23.

31. Stuvel, G., op. cit., p.204.

32. Rosovsky, H., op. cit., p.15.

33. See Chapter 5, below.

34. 'Potential Capital Goods' are defined in Chapter 6, below.

35. Stuvel, G., op. cit., p.206.

36. U.N., op. cit., p.8.

37. Ibid., p.8.

38. See Stuvel, G., op. cit., pp.248 ff.

39. Although there may be movement of some small capital goods across political boundaries, particularly by nomads, it is most probable that the movement is of a seasonal nature.

And it appears from the trade statistics of Iran that all international transport carriers are included within the trade statistics. Thus none will be omitted from the present study.

40. U.N., op. cit., pp.10-11.

41. Ibid., pp.10.11.

42. Iran, Ministry of Interior, General Department of Public Statistics, 'Report on the Industrial Census of Iran', 'Summary of the Results', Series S, No.4, (persian), Tehran, 1965, p.38.

43. This assertion is based on a subjective generalization

that the smaller units of industry tend to use older assets. An observable example of this is the new hire-car which starts its life in a large, long-distance taxi company, is then transferred to a smaller city taxi company, then to an owner driver in the city, and finally to an owner-driver in a smaller town as it gets older.

44. This is the type of transfer charge made by lawyers on the sale of an automobile. Based on my own experience in Iran.

45. See discussion of the margin of error in the aggregated results in Chapter 10, below.

46. The 'Expenditure-Survey Method' is described in Chapter 3, below.

47. U.N., op. cit., p.13.

48. Ibid., p.13.

49. The 'Balance-Sheet Method' is described in Chapter 3, below.

50. A review of the official estimates of various countries, with mention, in many cases, of whether repairs and spares are included is given in United Nations, 'National Accounting Practices in Sixty Countries', New York, 1964. (Studies in Methods, Series F, No.11).

51. I.e. an assumption is made that parts which can be associated with certain types of machinery and equipment are also likely to be of a type which will last longer than one year.

52. See Bureau International des Tarifs Douaniers, 'Bulletin International des Douanes No.138, Iran', Brussels, 8th edition, 1960, introduction.

53. This method is feasible in Iran where the number of assembly plants is small. See Bank Markazi Iran, 'Investor's Guide to Iran', Tehran, 1966, for list of assembly plants.

54. For example, Bank Markazi Iran, 'Provisional Estimates of National Income of Iran, 1959-1963', Tehran, 1966.

55. U.N. 'Concepts....', op. cit., p.13.

56. U.N., 'National Accounting.....', op. cit., relevant sections on estimates of Scandinavian countries and other advanced nations.

57. Bank Markazi Iran, 'Bulletin', Vol. 5, No. 26, p.210. In this source, additions and alterations are defined as 'expenditures for construction of projects such as new boundary walls, new water reservoirs, addition of a wing or a new story to the existing structure; the enclosure of additional space; the removal of walls to create larger rooms; the remodelling of store fronts; or the initial installation of fixed equipment, e.g. elevators, central heating, plumbing, electrical wiring, etc.' (p.212).

58. I.e., they will affect levels of capital formation but not trends.

59. U.N., 'Concepts....', op. cit., p.12.

60. See National Iranian Oil Company, 'Annual Accounts', Tehran, unpublished annually; Also Iranian Oil Operating Companies, 'Annual Accounts', unpublished annually.

61. This applies to years after 1940 only.

62. U.N., 'Concepts....', op. cit., p.18.

63. Netherlands Engineering Consultants (N.E.D.E.C.O.), 'Ship Repair Facilities for Southern Ports of Iran', Tehran, 1964, p.vi.

64. U.N., 'Concepts....', op. cit., p.12.

65. See Ruggles, R. and N., op. cit., pp.387 ff.

66. The current rate of exchange (October 1968) is pegged at £1 = 181.80 Rials. One million rials = £5,500, approx.

67. Imperial Bank of Persia, 'Minutes of Ordinary General Meeting, 1932'; obtained through the courtesy of the British Bank of the Middle East.

68. See Iran, 'Foreign Trade Statistics', for the years 1933-1938.

69. One man (batman) = 2.97 kg. Temple, B., 'Report on Trade and Transport Conditions in Persia to January

1922', Department of Overseas Trade report, London, 1922, p.4.

70. U.N., 'Concepts....', op. cit., p.12.

71. See discussion in Chapter 6, below.

72. See discussion in Chapter 7, below.

73. The Flow of Capital Goods Method is described in Chapter 3, below.

74. Indeed, this is a basic objection to the use of accounting data in capital formation estimates. See U.N., 'Concepts....', op. cit., p.10; Also May, G.O., op. cit., pp.193 ff.

75. U.N., 'Concepts....', op. cit., p.12.

76. Stuvel, G., op. cit., p.257.

77. U.N., 'Concepts....', op. cit., p.18.

78. Denison, E.F., 'Theoretical Aspects of Quality Change, Capital Consumption and Net Capital Formation', in N.B.E.R., 'Problems....', op. cit., p.216.

79. Ibid., pp.215 ff; also Ruggles, R. and N., op. cit., pp.402 ff; also Haberler, G., 'International Trade and Economic Development', National Bank of Egypt, Cairo, 1959, p.21.

80. U.N., 'Concepts....', op. cit., p.16.

81. A rough estimate of the life-span of residential dwellings is made in Chapter 8, below. No information of any type is available on the average life of machinery and equipment.

82. This phenomenon has been noted by the present author (see Chapter 7, below), and also by Smith, A., 'Blind White Fish in Persia', London, 1953, p.119, among others.

83. U.N., 'Concepts....', op. cit., p.10.

84. It can be argued that modes of depreciation accounting reflect the prevailing system of company taxation as it applies to individual enterprises. See Walker, D., in Meij, J. (ed.), 'Depreciation and Replacement Policy',

North-Holland Publishing Company, 1961, pp.153-4.

85. In general, these enterprises are 'enclave companies' or companies which have been established through former 'enclaves', such as the expatriate and National oil companies and banks.

86. No accounts of householders are available in Iran, except on a personal basis, and these are completely unreliable.

87. U.N., 'Concepts....', op. cit., p.18.

88. Bank Markazi Iran, 'National Income of Iran, 1959-1965', Tehran, 1968.

89. See discussion in Chapter 4, below.

90. U.N., 'International Standard Industrial Classification of all Economic Activities', Statistical Papers, Series M, No.4, (Rev. 1).

91. See Hashim, J.M., op. cit., p.181. Hashim uses the percentage contribution of the eleven sectors to G.D.P. as a means of allocating capital formation for some sectors.

92. See U.N., 'National Accounting....', op. cit., sections referring to individual developing countries.

93. The full list can be found in U.N., 'Concepts....', op. cit., pp.18 ff.

C H A P T E R T H R E E

METHODOLOGY

In this chapter, the advantages and disadvantages of estimating capital formation by seven different methods are discussed, with particular reference to the statistical basis for the application of each of these methods in Iran. In addition, a brief survey is made of methods applied in other countries together with an appraisal of the recommendations on methodology given by the United Nations.[1]

Methods of arriving at figures for Gross Domestic Fixed Capital Formation have hitherto been divided into three major categories, usually named the financial-flow method, the commodity flow method, and the expenditure method.[2] However, this tripartite division hides a number of important differences within each type. Its use has also tended to imply that each method is independent of the other methods for all components of G.D.F.C.F.

In fact, as is shown later, it is usually impractical for any one method to be employed exclusively. The reason is that statistical information even in the most advanced countries of the world is rarely comprehensive enough, and that a combination of different methods is needed to take best advantage of available data.

The seven types distinguished here are as follows:

a. The Flow of Savings Method.
b. The Flow of Capital Goods Method.
c. The Balance Sheet Method.
d. The Budget Method.
e. The Expenditure Survey Method.
f. The Census-Interpolation Method.
g. Indirect Methods.

Given that necessary data are available, an estimate of G.D.F.C.F. may be built up by use of any one of these methods or by any combination of them.

The Flow of Savings Method

The Flow of Savings Method measures capital formation from an ex-ante viewpoint. It is based on the assumption that any income not spent (i.e. saved) in a given period is equal to 'investment' in that period. By measuring savings, therefore, one is also measuring 'investment'. If 'investment' is then assumed to be equivalent to G.D.F.C.F., a measure of capital formation is thus obtained.

In most countries and studies[3] (one exception appears to be the official National Accounts of Switzerland)[4] this method of estimation has not been used; nor has it been recommended by economists[5] or by international organizations.[6] Being a financial concept, it is basically inconsistent with the 'physical' concepts and definitions accepted in Chapter 2, while its ex-ante nature automatically precludes all the relevant classification procedures discussed in that chapter.

In Iran, direct estimation of savings is impossible due to a lack of data about the sources or amounts of such funds. For the same reason it is not possible to analyse the empirical relationship between savings and

G.D.F.C.F. Indeed, the only known study of savings in Iran draws almost exclusively on existing capital formation estimates.[7] Consequently, the Flow of Savings Method is not used in any part of this study.

The Flow of Capital Goods Method

For capital goods which flow between producers and final users it may be possible to break into the flow to measure the volume and/or value of such goods. Where there is an international flow of capital goods an obvious 'break-in' point is the place of entry into, or exit from, a country. For domestically produced capital goods, the factory gate is a suitable point. Measurement of capital formation in this way may be called the Flow of Capital Goods Method.[8]

There are two basic disadvantages of this method. Firstly, the most convenient 'break-in' point tends to be at an unknown time and distance from the point at which the goods are installed and/or ready to participate in the productive process, even if it is assumed that such goods do actually reach a final user.[9] As an example, a capital good cleared from customs in Iran may travel on average 1,000 kilometres and take three months before it arrives at its final resting place.[10] During this time, its market value will become greater than the c.i.f. value of the good plus any customs duties and charges. Freight

charges, inland insurance, distributors fees, interest, installation costs and sundry other expenses will all add to the total expenditure on the good by the final user and therefore to its market value.[11] Such additional expenditures occur even with domestically-produced capital goods measured at the gate of the producing factory.[12] Consequently, it is usually necessary to make allowance for these expenses - often by arbitrary means - to arrive at market values for capital goods. This process also leads to difficulties with deflation procedures, especially when no simple relationship between c.i.f. prices and market prices can be found.[13] And the final totals, deflated or not, will still not be precisely relevant to the time-period (year) under study due to the unknown interval between 'break-in' point and the completion of installation.

The lack of coincidence between the 'break-in' point and the time at which the capital good enters the productive process also means that a classification of capital goods by type of final user is, for the most part, impracticable. Though it may be possible to distinguish to some extent the type of final user by the type of capital good (a locomotive, for example, is unlikely to be used by a sector other than the transport sector) for the majority of capital goods this is impossible except on arbitrary

assumptions.[14]

The second disadvantage of the Flow of Capital Goods Method is that, by definition, it cannot be used for items which do not 'flow'. This is particularly true for all types of construction and works.[15] Attempts have been made in some countries to measure this type of capital formation by use of the flow of construction materials, the value of imports plus domestic production being marked up by arbitrary percentages to cover non-material costs of construction.[16] But the objections to this bastardized Flow of Capital Goods Method include the fact that no non-arbitrary distinction can be made between materials used for new construction, materials used for repairs and alterations, and materials which just increase stocks held. In addition, data on the production of domestic building materials are usually scarce.[17] This is certainly true in Iran, where almost all construction materials except those made of iron or steel, and certain fittings, are produced within the country.[18]

However, the disadvantage also applies to capital goods produced within the country by their final users - such as the many indigenous tools made by workers for their own use, or by factories for their own productiom lines.[19] Indeed, the use of the Flow of Capital Goods

Method by official Iranian estimators has led to an omission of such tools and equipment, and to a resultant understatement in their totals for G.D.F.C.F.[20]

Use of this method implies that the investigating economist must choose the items he considers to fall into the category of 'potential capital goods',[21] and that he estimate the proportion of these which may be destined for use by non-producers.[22] Although these two processes are highly subjective, even when the definition of a capital good is explicitly made, they do enable consistent lists of capital goods to be used by any single student, and it is likely that subjective differences in lists based on the same definitions would not be significant. Nevertheless, deficient selection of capital goods in relation to a given definition can, of course, lead to wide variations in results. This is illustrated in Chapter 4, in which a comparison is made between aggregate c.i.f. values estimated by an official Iranian source[23] and those calculated for the same years in Part II.

The Flow of Capital Goods Method enables a detailed classification of capital formation by type of asset to be employed, and this may be useful in some cases, such as the study of vehicle or agricultural machinery imports.[24] But the United Nations considers that the method has a

further advantage - that of facilitating a classification of G.D.F.C.F. by industries producing the capital goods.[25] This is clearly irrelevant for imported capital goods, for which the method is mainly applicable. And the importance of its application to the domestic production of such items is dependent on the relative significance of these items in G.D.F.C.F.[26]

In spite of its admitted disadvantages, the majority of estimators continue to use the Flow of Capital Goods Method, either in whole or in part. The official estimates of 46 out of 53 countries reportedly employ this method, particularly for capital formation in machinery, plant and equipment.[27] The reason is that in most of these countries these types of capital goods are recorded in volume and value terms in the country's trade statistics, which is often one of the few regular statistical publications. This is true for Iran, and extensive use is made of the Iranian trade figures in the estimates of Part II.

The Balance Sheet Method

The Balance Sheet Method makes use of the annual accounts of government and business organizations, and private households. G.D.F.C.F. may be estimated, in theory, by adding the amounts listed under 'fixed assets purchased during the year before depreciation' in all (non-consolidated) balance sheets in the country.

One argument in favour of this method is that the use of balance sheet data enables some classification of capital formation by industrial use to be made. And if the data are provided in the three categories usually used by accountants - machinery and equipment; furniture and fixtures; building and works - classification by type of capital good is also possible.

But the method has one basic disadvantage. The definition of capital goods or fixed assets is left in the hands of individual accountants, and there is no guarantee that they will all apply and adhere to the same definition.[29] Moreover, since the build-up of depreciation accounting tends to reflect the effects of profits taxation on individual enterprises,[30] there is even a danger that considerable distortion of figures will occur. And, as has been stated in Chapter 2, there is no intrinsic value or empirical relevance in stating that balance sheets 'reflect prevailing business practices'.[31]

In many advanced nations, company balance sheets and government accounts are regularly filed and readily available.[32] Feinstein, for example, was able to make extensive use of them in his study of G.D.F.C.F. in Britain for the period 1920-1938.[33] In Iran, however, business organizations and households do not generally produce balance sheets,[34] and it is only in very recent

years that government accounts have been published.[35] The accounts of all registered Iranian companies are supposed to be published annually in the official gazette,[36] but the accounts that do appear are incomplete, unindexed and entirely unsuitable for capital formation estimates.[37]

Some large enterprises which have applied for loans from the two industrial development banks[38] have, however, had their annual accounts reworked by these banks. 37 such accounts were obtained, but only for one year (1964) could a reasonable number of these accounts (15) be utilized, and the total value of fixed assets purchased by these firms in the year equalled 167,275 rials - a total so small as to be completely insignificant in the context of this study.[39]

In Part II it has been possible to use detailed Balance sheet data only in the case of the National Iranian Oil Company and the Iranian Oil Operating Companies.[40] This is because these two organizations produce accounts which are comparable to those of most large organizations in Europe and the United States. The argument, put forward by Hooley,[41] that the largest 'capital formers' outside of agriculture in developing economies tend to use double-entry book-keeping certainly does not apply in Iran. And if it did there is no guarantee that these same accounts would be made public, or that

they would be given in the same form and with the same content to government inspectors.[42]

The Budget Method

In many countries, even where annual accounts are the exception rather than the rule, government and private organizations draw up budgets.[43] This is equally true of development bodies which formulate national plans as it is of private firms or individuals who require permission for various activities.

In Iran, for example, all government ministries and departments must present an annual budget to the Ministry of Finance in order to obtain funds for operation.[44] In addition there is legislation, not always adhered to, which requires all new industrial and mining establishments to apply for commencement and operation permits from the Ministry of Economy.[45] And any person who wishes to build a structure within the city limits is supposed to apply for a municipality construction permit.[46] Use of these budgets or permits for estimating G.D.F.C.F. may be called the Budget Method.

Because of the availability of this type of data, the National Income estimators of at least 22 countries make use of statistics based on permits of various types.[47] Moreover, it is clear that the many students who refer to government accounts do, in fact, use government budgets.[48]

One serious disadvantage of this method is that it is impossible to determine from plans, budgets or permits how much of forecasted expenditure on capital formation is actually made in any given year. It is also difficult to determine whether planned expenditures on current and capital account are, in fact, made for these purposes, and whether capital expenditures follow the same, or similar, definitions of capital goods and the producer sector as have been accepted in Chapter 2.[49]

To exemplify these problems, some subjective opinions were obtained from statisticians involved in the collection of this type of data in Iran. It is estimated that between 10-15 per cent of buildings in Tehran are constructed without a permit,[50] and this percentage must be considerably higher in other cities.[51] About 20 per cent of permitted buildings throughout the urban areas of the country are not constructed,[52] and it is known that the size of building is often different to that described in the permit.[53] It is thought that as many as 75 per cent of new establishments in the industrial and mining sectors start operation without permission,[54] although most of the larger firms apply for permits because of tax concessions on imported machinery.[55]

The Iranian Government Budgets from 1964 do make a distinction between current and capital account, but this

is not followed up in the reports of actual expenditures in these years.[56] Some figures based on the budgets and accounts of the Plan Organization are utilized in Part II,[57] but no clear definitions of capital expenditure are made as preference is given to the term 'development expenditure', which includes a number of elements not regarded here as expenditure on capital goods.[58]

It is possible to make adjustments to plan, budget and permit figures to overcome these problems, and this has been done both in this study[59] and in other studies.[60] Nevertheless, the use of this type of data is unsatisfactory, and subject to a high margin of error. And it is of little relevance for judging the performance of an economy in terms of capital formation as it is based on expected or planned expenditures rather than actual expenditures.

The Expenditure Survey Method

A method of estimation which has all the advantages of the Balance Sheet method but none of the disadvantages is the Expenditure Survey Method. It is based on annual sample surveys of all producing establishments, by interview and/or by questionnaire, and when enumeration is efficient it is by far the most satisfactory means of arriving at annual totals for G.D.F.C.F.

With this method the definition of capital goods can be laid down by the investigator instead of by the respond-

ing accountant. This ensures consistency in aggregation and relevance in the results. In addition, the list of questions may be extended to cover details of stocks, repairs and maintenance expenditures, installation and distribution expenses and second-hand assets, few of which are available by other methods.[61]

However, the Expenditure Survey Method has two disadvantages which make its operation in less-developed countries more difficult than in the advanced countries. In the first place it is relatively costly and requires the services of a large number of competent enumerators. Secondly, any sample frame used must constantly be kept up-to-date, by ensuring that all new establishments are covered in the survey.

Iranian experience with this method has been limited to two aspects of capital formation. The Ministry of Economy uses it for an annual survey of manufacturing industry,[62] but ministry statisticians have found that the method tends to degenerate into the Balance Sheet method because of a shortage of reliable enumerators.[63] Questionnaires filled out by company accountants are not regularly checked for definitional consistency, and there are doubts about the validity of the sample frame due to the poor reporting of new establishments.[64]

A better example of how the method can be used is

in the Bank Markazi Iran annual survey of private construction in the urban areas of Iran.[65] The adequacy of the basic sample frame is not in question and a number of other useful cross-checks have been made by the bank. In addition, all completed questionnaires are double-checked for inconsistencies, and further checks are made on 'abnormal' replies.[66] Even in this survey, however, no adjustment has been made for the inclusion of private construction activity in new urban areas.[67] This is an adjustment which has been made in Part II to ensure consistency with the concept of urban areas used in this study.[68]

The United Nations recommends that the Expenditure Survey method be used where possible, although recognition is made of the fact that the Balance Sheet Method may have to be used as a substitute.[69] But no new expenditure surveys have been made in this study because of the constraints imposed by time and resources. However, considerable use is made of the Bank Markazi Survey in the estimates of capital formation in all types of construction.

The Census-Interpolation Method

This method is a variation of the Expenditure Survey Method. Instead of annual sample surveys, periodic nation-wide censuses are held and interpolation indices are used to provide figures for the inter-censal years.

The reliability of the method depends, to a large extent, on how often the censuses are taken. In a fast-growing economy a quinquennial census would probably be required.

The Census-Interpolation Method is useful in developing economies because the quality of censuses with regard to enumerators, training and response is usually relatively high. This is due to the fact that reliable part-time enumerators (such as 12th grade students) can be employed and also to the fact that a census produces a psychological stimulus in respondents which annual samples do not produce. These assertions are based on the Iranian experience with population, industrial and agricultural censuses.[70]

The use of interpolation indices implies that results in inter-censal years are less reliable than those in census years. Nevertheless, it may well be possible to produce reliable indices once the structure of capital formation is known by means of data on imports and domestic production obtained through use of other methods of estimation.[71]

In this study use is made of the Census-Interpolation Method in the original estimates of population for 1900-1966,[72] and to some extent in the estimation of expenditure on construction of all types.

Indirect Methods

Where none of the above six methods can be used for

estimating G.D.F.C.F., either singly or in combination, it may be necessary to use indirect procedures. For the most part this involves a use of assumed or determined ratios between the elements of capital formation to be measured and other known variables.[73]

In Part II, for example, a considerable part of expenditure on residential housing is estimated from data on population growth, the average size of families, the average number of families per house, the average life-span of houses and the average cost. This is because no direct estimate of this expenditure is possible.[74]

Indirect methods tend to be less reliable than other methods unless the relationships between the different variables involved are stable and can be accurately determined. They are most successful when such relationships can be shown to be constant over time. In addition they are invaluable when no direct sources of data exist, and also for cross-checking direct methods of estimation.

The U.N. makes no mention of indirect methods although many students use them. In developing countries where data limitations are often the most serious constraint on capital formation estimates they are particularly useful.

A Combination of Methods

From the above discussion it is clear that, in the

absence of comprehensive data on capital goods, most of the mentioned methods are suitable for only some elements of G.D.F.C.F. Consequently, a combination of methods is necessary in order to make full use of existing information, and hence to obtain the greatest accuracy. Although none of the international recommendations on methodology have admitted this conclusion, the empirical studies of almost all countries which produce capital formation estimates have relied on a mixture of methods.[75]

Indeed, in Part II, the Flow of Capital Goods Method is used for imports of capital goods and for domestic production of 'modern' capital goods; the Expenditure Survey Method is used for 'traditional' capital goods produced indigenously and for private urban housing expenditure 1960-1965; a combination of the Census-Interpolation Method and Indirect Methods is used for all other housing expenditure; while for expenditures on other building and works use is made of the Balance Sheet and Budget Methods as well as a number of indirect methods.

The only problem that arises when more than one method is used to build up totals for G.D.F.C.F. is the problem of double-counting. However, this difficulty is exaggerated in the literature.[76] Experience in Iran suggests that it is more practical to make allowances for double-counting than to ignore sources of data which may involve an element

of double-counting. Common types of double-counting are the inclusion of expenditure on domestically assembled vehicles as well as expenditure on the imported parts which are to be assembled; the inclusion of expenditure on imported heaters, stoves and boilers as well as expenditure on new construction which already includes these items; and the inclusion of expenditure on machinery imported privately as well as government expenditure on machinery purchased from the private sector. Not all of these adjustments are in fact made in this study, although figures which may contain an element of double-counting are noted.

Notes

1. United Nations, Statistical Office, 'Concepts and Definitions of Capital Formation', Studies in Methods, Series F, No.3, 1953.

2. Ibid., p.6, ff.

3. Details from United Nations, Statistical Office, 'National Accounting Practices in Sixty Countries', Studies in Methods, Series F, No.11, 1964.

4. Ibid., pp.213, ff.

5. Clark, C., 'Investment in Fixed Capital in Great Britain', Royal Economic Society, Memo No.49, 1934.

6. U.N., 'Concepts....', op. cit., p.6.

7. Moghadam, R., 'Saving in the Iranian Economy', in Bank Markazi Iran Bulletin, Volume 1, No.6, March-April 1963, pp.3, ff.

8. Because of the use of the 'Commodity Flow Method' for both capital goods and raw materials it is necessary to make a distinction between these uses. The Flow of Capital Goods Method refers to capital goods only.

9. This assumption must usually be made unless increases in the stock of capital goods not in the hands of final users are held to be included in the concept of capital formation. See discussion in Chapter 2, above.

10. See discussion in Chapter 6, below.

11. U.N., 'Concepts....', op. cit., p.10.

12. Feinstein, C.H., 'Domestic Capital Formation in the United Kingdom, 1920-1938', Cambridge, 1965, p.13.

13. i.e. a deflator used for c.i.f. values of capital goods may not be relevant for market values of such goods. See discussion in Chapter 2, above.

14. Feinstein, C., op. cit., p.13.

15. Capital goods which do not flow are those which are constructed in the place in which they are used.

16. See U.N., 'National Accounting....', op. cit., sections on Barbados, Burma, Ceylon, Ghana, Mexico, Panama and Sudan.

17. Ibid., sections quoted.

18. Information privately obtained from Engineer M. Sepahi of M. Sepahi and Associates, Architectural Engineers of Tehran, Interview on October 18, 1966.

19. See discussion in Chapter 7, below.

20. A comparison between official Iranian estimates and those of Part II is made in Chapter 4, below.

21. 'Potential capital goods' are defined in Chapter 6, below.

22. 'Producers' and 'Non-Producers' are defined in Chapter 2, above.

23. Bank Markazi Iran, 'Provisional Estimates of National Income of Iran, Tehran, 1966, Appendix 6.

24. In general it may be stated that detailed classification of G.D.F.C.F. by type of asset is of little relevance to aggregative studies.

25. U.N., 'Concepts....', op. cit., p.10.

26. Even in this case the advantage only applies when the Flow of Capital Goods is measured at the factory gate.

27. U.N., 'National Accounting....', op. cit., relevant sections for countries which use an expenditure approach to national accounting.

28. This item may be given slightly different titles in the balance sheets of different organizations.

29. May, G.O., 'Changes in the Accounting Treatment of Capital Items during the last Fifty Years', in National Bureau of Economic Research, 'Problems of Capital Formation', New York, 1957, pp.193 ff.

30. Walker, D., in Meij, J. (ed.), 'Depreciation and Replacement Policy' North-Holland Publishing Co., 1961, pp.153-154.

31 See discussion in Chapter 2, above.

32. In Britain, for example, companies are required to file annual accounts at the Board of Trade.

33. Feinstein, C.H., op. cit., pp.20-21.

34. This probably applies to most other developing countries also. See Hashim, J.M., 'Capital Formation in Iraq, 1957-1962', London University Ph.D. thesis, 1966, unpublished, p.93, for a similar view on Iraq.

35. The complete government accounts appear in the National Budget publications from 1964, with a two-year time lag; i.e. the Budget for 1965 includes actual accounts for 1963.

36. 'Rooznameh Rasmi', publication of the Ministry of Justice.

37. Files of the official gazette were examined in the Companies Registration Office in Tehran through the courtesy of officials of that office.

38. These banks are the Industrial and Mining Development Bank of Iran, and the Industrial Credit Bank. The extent of loans made each year can be found in the annual reports of these banks.

39. These accounts were obtained through the courtesy of Dr. F. Mahdavi, Economic Director, and Mr. A. Shamsavari, Economist, of the Industrial and Mining Development Bank of Iran.

40. See Chapter 9, below.

41. Hooley, R.W., 'The Measurement of Capital Formation in Underdeveloped Countries', in Review of Economics and Statistics, July 1967, pp.206-208.

42. Information based on my discussions with a number of businessmen, commercial counsellors and Bank Markazi statisticians during 1966-1967.

43. Ramamurti, B., and Pedersen, H.T., 'Statistical Methods of Estimating Capital Formation Expenditure in E.C.A.F.E. Countries', in 'Asian Studies in Income and Wealth', London, 1965, p.117.

44. See introduction to Iran, Ministry of Finance, 'Budget of the Government of Iran for the Year 1346, Tehran,

unpublished, 1967.

45. Iran, Ministry of Economy, Bureau of Statistics, 'Report on Commencement and Operation Permits for Industrial Establishments in 1966', Tehran, 1967, preface.

46. This regulation is mentioned in Homayoon, B., 'National Income of Iran 1959-1962, Tehran, 1964, p.16.

47. Survey based on U.N., 'National Accounting....', op. cit.

48. Ramamurti, B., and Pedersen, H.T., op. cit., p.117.

49. Ibid., p.117.

50. Homayoon, B., 'Experience in Estimating National Income and Product of Iran', Tehran, 1964, p.11. Homayoon later suggests that this percentage declines over time. See Homayoon, B., 'National Income....', op. cit., pp.16-17.

51. Information privately obtained from Bank Markazi Iran statisticians concerned with analysing municipality budgets, in various interviews between October 1966 and June 1967.

52. Information from Dr. Kartuzian of the Economics Department of the Mortgage Bank of Iran, in conversation, January 18, 1967.

53. Homayoon, B., 'National Income....', op. cit., p.16. Also mentioned by Kartuzian (see note above).

54. Information from Engineer A.A. Shaheen, Director of Statistics of the Ministry of Economy, in conversation, October 9, 1966.

55. Ibid., in conversation, October 9, 1966.

56. See Iran, Ministry of Finance, 'National Budget', Tehran, annually from 1964.

57. See discussion in Chapter 9, below.

58. Iran, Plan Organization, Planning Division, 'Outline of the Third Plan, 1962-1968', Tehran, 1966, p.III.

59. See Chapter 9, below.

60. Homayoon, B., 'National Income....', op. cit., p.17.

61. Whether these items can be included or not depends on the quality and quantity of enumerators.

62. Iran, Ministry of Economy, Bureau of Statistics, 'Report on the Results of Annual Industrial Survey in 1965', Tehran, 1968, p.I.

63. Information from statisticians in the Ministry of Economy, in conversation, October 9, 1966.

64. Information from Engineer A.A. Shaheen, in conversation, October 9, 1966.

65. The first aggregate survey appears in Bank Markazi Iran, 'Bulletin', No.26, pp.206, ff.

66. Ibid., pp.211-213.

67. Information from Bank Markazi Iran statisticians concerned with the compilation of construction data, at various meetings in 1966 and 1967.

68. See Chapters 8 and 9, below.

69. U.N., 'Concepts....', op. cit., p.6.

70. Information from the various statisticians concerned with the production of these censuses, at various meetings in 1966 and 1967.

71. i.e. the less costly methods of estimation may be used for the purposes of producing an index rather than for the actual G.D.F.C.F. figures.

72. Bharier, J., 'A Note on the Population of Iran, 1900-1966', in Population Studies, July 1968.

73. Indirect methods would also include use of 'comprehensive information on specific types of assets'. See Feinstein, C.H., op. cit., p.14.

74. See Chapter 8, below.

75. Based on a survey of information in U.N., 'National Accounting....', op. cit.

76. See, for example, comments in Ramamurti, B., and Pedersen, H.T., op. cit., pp.109 ff.

CHAPTER FOUR

A CRITICAL APPRAISAL OF OTHER CAPITAL FORMATION ESTIMATES IN IRAN

Since 1957 a number of estimates have been made of capital formation in Iran. Some are concerned with only a part of aggregate G.D.F.C.F., while others relate to G.D.F.C.F. in a single year. Only one continuing aggregate series exists - that produced by the Bank Markazi Iran for the years 1959-1965.

In this chapter a critical appraisal is made of all existing estimates of capital formation. Particular attention is paid to the official Bank Markazi Iran series, and detailed comparisons are made between the results of Part II of this study and those of the Bank. Finally, a number of suggestions are made as to how the official series might be improved.

Luther's Estimate

The first estimate of aggregate G.D.F.C.F. in Iran was made by Ernest Luther, an American economist working with the Point-4 Program, for the single year 1957.[1] It has not been possible to obtain a copy of his original unpublished memorandum in which the estimate appears, but it is reported that his figure of 13.0 billion rials for capital formation by the private sector is based on customs data.[2] His total of 10.2 billion rials for public sector capital expenditures is presumably based on government budgets.

In any event, it is clear that Luther's total of

23.2 billion rials for G.D.F.C.F. in 1957 is a gross underestimation of the true position. It compares with 46.2 billion rials estimated in Part II and lies well outside the largest possible margin of error in the latter figure.[3] Some confirmation of this conclusion is given by the fact that Luther's estimate was used to build up a total for Gross National Product and that this total has also been criticised for its serious understatement.[4]

Simonet's Estimate

Pierre Simonet, United Nations Adviser on Statistics to the Iranian Government, made an estimate of G.D.F.C.F. for 1959 as follows:[5]

Capital formation by private enterprises	20 b. rials
Capital formation by public enterprises	5 b. rials
Capital formation by the Oil Consortium	6 b. rials
Capital formation by the Government	15 b. rials
Gross Domestic Fixed Capital Formation	46 b. rials

Public enterprise and Government expenditures were estimated from various state budgets, while Oil Consortium (I.O.O.C.) expenditures were calculated by two experts from the Plan Organization.[6] Simonet considers that these three sub-totals have sufficient precision not to need further enquiry, and yet he also states that the public enterprise figures are given only as an order of magnitude.[7] Private enterprise expenditures are calculated from an extrapolation of Adib-Soltani's series for private manufacturing industry discussed below.

The total of 46 b. rials compares with 72 b. rials calculated in Part II. It lies just within the estimated margin of error in the latter figure, but nevertheless can certainly be regarded as an understatement, even though Simonet himself implies that it probably exaggerates the true figure.[8] Moreover, Simonet's conclusion about the precision of results based on forecasted expenditures cannot be accepted.[9]

Adib-Soltani's Estimates

In 1959, Sharif Adib-Soltani, an Iranian economist, produced a capital formation series for private manufacturing industry for 1948-1957.[10] The series was later extended to cover capital formation by the whole private sector for the period 1937-1959.[11] This latter study comprises four parts - Agriculture, Industries, Transportation and Construction - and a summary of the results is given in Table 4-1. It is not possible to compare the annual totals with those calculated in Part II because of different coverage. However, a discussion of methodology and of some sub-totals can be made.

Although Adib-Soltani's concepts and definitions are basically the same as those discussed in Chapter 2, he has made a number of significant omissions from his calculations. Firstly, capital formation by the oil industry has been left out 'because of the special status

of oil in Iran'.[12] This cryptic explanation presumably means either that though the expatriate oil industry is privately-controlled, its activities are more relevant to the public sector of the economy, or that it should be treated separately (as Simonet has done) as an enclave industry. In the first case the fact that all fixed assets constructed or imported into Iran by the I.O.O.C. technically belong to the state-owned National Iranian Oil Company can be used as an argument.[13] In the second, the matter is one of choice.

Secondly, separate estimates of expenditure on residential farm buildings have been left out on the extraordinary assumption that changes in the stock of these buildings have been financed out of funds for non-residential construction and works.[14] There is no evidence that this is so; indeed it is a clear contradiction in terms. Thirdly, it is assumed that domestic production of capital goods (other than buildings and works) is nil.[15] Adib-Soltani, in a bravely-published self-criticism of his own work, admits that this is an unrealistic assumption but considers it inevitable due to the absence of adequate data.[16] And finally, no account has been taken of capital formation in either the aviation and shipping industries or in the assembly plants for other types of transport equipment.[17] These four omissions narrow the scope

of the series considerably.

Adib-Soltani calculates capital formation in machinery, plant and equipment from customs data and, unlike all other Iranian studies, he clearly states the tariff numbers which have been employed. The c.i.f. value of imported capital goods is marked up by an arbitrary 20 per cent for the agriculture and transport sectors, with market values being obtained by adding the relevant customs duties. For the manufacturing sector the mark-up of c.i.f. values is assumed to vary directly with changes in import values and inversely with the cost of living index. The annual mark-up is based on one of 75 per cent calculated for 1957. But the base figure is obtained from a survey relating to public (not private) sector imports,[18] and the assumptions about the size of the annual mark-up are thus completely unrealistic. On the one hand they disregard the fact that any mark-up of c.i.f. values to market values must include customs duties and freight charges, both of which are independently available, and neither of which bears any known relationship to the cost of living. On the other hand, they ignore the fact that distribution (and to some extent installation) expenses are almost certainly related to c.i.f. values rather than to the level of domestic prices.[19] In any case it is hard to believe that 97 per cent of expenditure on imported capital goods in the late

1930s was taken by the cii.f. value of the goods, which is what Adib-Soltani estimates.[20]

Calculations of expenditure by the private sector on construction are based on the cost of steel as a proportion of the total cost of buildings. The c.i.f. value of steel in 1959 is marked up by an arbitrary 10 per cent to cover distribution expenses and other charges. 40 per cent of the steel's market value is arbitrarily assumed to be used for private sector buildings, and this amount is multiplied by 4.5 to account for expenditures on materials other than steel in steel-based buildings. The total is then multiplied by 125 per cent to account for buildings which have no steel component whatsoever. Finally, a time series is constructed by use of the ratio between the figure obtained for 1959 and the loans of the Mortgage Bank of Iran in that year.[21] But it is clear that, even if the arbitrary percentages used in this calculation process could be substantiated, the final annual totals would still be completely unreliable. For in the first place there is no evidence that the Mortgage Bank loans have always been used for purposes of construction.[22] And in the second place it is highly unlikely that the ratio between these loans and total private sector expenditure on construction has remained constant over time.[23]

In spite of the serious criticisms which have been

made here of Adib-Soltani's study (and with which, for the most part, he agrees)[24] he made a significant contribution to the study of capital formation in Iran in that his figures for 1959 were used by Simonet, whose estimate of G.D.F.C.F. led to the commencement of the official Bank Markazi Iran series. Indeed, in the calculations of Part II, Adib-Soltani's figures for annual expenditure on irrigation, land improvements and other rural works are used without adjustment because they are still the best estimates for the years up to 1959.[25]

Shaheen's Estimate

In 1963 the first nationwide industrial census was taken.[26] Industrial establishments were asked to provide data about expenditure in 1962 on capital goods of a value more than 1,000 rials. Other information required was the total value of fixed assets by type, and whether the additions to the stock of fixed assets were bought new or second-hand or whether they were produced within the establishment. The census covered all manufacturing industry and fuel and water-producing establishments, and a separate survey was made of mining activities.[27] Annual surveys based on various size samples of the 1962 list of establishments have been carried out since 1963 and the results can be found in the published reports of the Iranian Ministry of Economy.[28]

They are not comparable with the results of Part II or with those of the Bank Markazi Iran due to different coverage. Moreover, since the annual totals for 1963, 1964 and 1965 appear to use different size samples and do not appear to make full allowance for new establishments,[29] the accuracy of the annual totals and the comparability of the time series may not be good.

In addition, Engineer Shaheen, the Iranian statistician responsible for most of the reports, has stated that exclusion of assets valued at less than 1,000 rials leads to a probable understatement of 13 per cent. He claims that deliberate understatement by enterprises of up to 10 per cent and the omission of installation costs leads to still further understatement.[30] Some data for the reports were obtained from annual balance sheets rather than directly through questionnaires, and in these cases there is likely to be a very high margin of error.[31] The American adviser to the Ministry, L. W. Clarke, referring to the census, could only report that 'the orders of magnitude obtained look reasonable'.[32]

Nevertheless, the system of enumeration of individual establishments by questionnaire is potentially the most reliable way of obtaining accurate estimates of G.D.F.C.F. both for individual economic sectors and for the whole economy. If an adequate sample were used; if new estab-

lishments were taken into account; if concepts and standards were laid down to make annual totals comparable; and if greater co-operation with statisticians in other organizations were possible, significant improvements and valuable checks could be applied to the present official series of the Bank Markazi Iran.

Three Other Estimates

Three other estimates of capital formation, by Kurtkan, Ahmadi and the International Labor Office, can be dismissed briefly.

Kurtkan has produced estimates of G.D.F.C.F. for 1955-1961 by using a series of completely arbitrary assumptions.[33] Starting with the Bank Markazi Iran's estimate of Gross National Product for 1959, he assumes a rate of growth of G.N.P. and by this means arrives at annual G.N.P. figures for 1955-1961. He then makes assumptions about the rate of capital consumption and the overall output-capital ratio and thus obtains his annual G.D.F.C.F. totals. His efforts can be regarded as little more than a simple mathematical exercise. For all years his figures are lower than those in Part II and for the years 1955-1959 the understatement varies between 26-39 per cent.

Ahmadi gives, on one page, three completely different estimates of 'investment' for the period 1955-1962 without any indication of sources.[34] It is known that he did not

calculate the estimates himself[35] and it must be assumed that they are pure guesses. He gives no explanation for the presentation of two tables which both allege to provide a breakdown of private and public investment and yet give different figures to each other and to all other known estimates. Consequently, Ahmadi's figures cannot be regarded seriously.

The International Labor Office reported that capital investment in modern industry in 1938 and 1939 amounted to 1.4 b. rials.[36] This figure has since been quoted by other students[37] although it is found to derive from a report of the registered paid-up financial assets of Iranian companies in the years concerned and not the value of physical assets.[38] The figure includes financial investment in land and is therefore not comparable with estimates made in Part II.

Bank Markazi Iran Estimates

Since 1962 four publications by the Bank Markazi Iran have provided estimates of G.D.F.C.F. for 1959;[39] 1959-1961;[40] 1959-1963;[41] and 1959-1965.[42] The annual totals given in these publications, each of which has involved the use of slightly different methods of estimation, are listed in Table 4-2, which also includes the estimates for 1959-1965 made in Part II.

It can be seen that, for all years, the Bank's official

estimates of G.D.F.C.F. are lower than the estimates in Part II by between 11-33 per cent. Although they are within the probable margin of error of the Part II results a closer examination of the figures and the methods of estimation used substantiates the contention that the official estimates are too low.

In Table 4-3 a breakdown of the annual totals by their four major components is made. From this table it is clear that, in general, the Bank has seriously underestimated expenditure on imported and domestically produced capital goods. The first two Bank studies also underestimated expenditure on construction of all types, whereas there is a tendency towards overestimation in the most recent studies.

Bank Markazi Iran, in all four studies, estimates imports of capital goods from the foreign trade statistics. No published list of the tariff numbers used has been made, but an unofficial list has been obtained from statisticians in the Bank.[43] It is reportedly based on the criterion of a one-year life span of the goods involved.[44] A full comparison between the tariff numbers listed in Appendix C and those used by the Bank for the years 1964 and 1965 is given in Appendix D. One major difference is that the Bank excludes about 90 items which must, under the criterion adopted, be regarded as 'potential' capital goods.

They include motor tyres and tubes,[45] most types of stoves, heaters, coolers, refrigerators, typewriters and their parts, furniture, cutlery, scientific equipment and many kinds of small tools. Another is that a number of items are included which could better be described as building materials rather than capital goods; bricks, tubing, wire, piping, etc. In addition there are inevitably a small number of borderline differences.

For 1959-1963 it is possible to calculate the overall effect of the use of a deficient set of tariff numbers. This is shown in Table 4-4, which compares the c.i.f. value of imported capital goods as estimated by the Bank and in Part II. It is found that, although the resultant understatement is small between 1959-1961, it becomes much larger in 1962 and 1963.

The proportion of c.i.f. values in the market value of imported capital goods is also much lower in the official estimates. This is shown in Table 4-5. Whereas the Bank estimates that about 80 per cent of market value is accounted for by c.i.f. value, my estimate is about 66 per cent. Further examination of the Bank's figures for 1959-1963 (also in Table 4-5) indicates that the chief reason for this difference lies in the estimated percentage mark-ups of c.i.f. values for distribution and installation expenses. The Bank's mark-ups have been criticised as being too low

by Mysliçki,[46] and my own mark-ups, substantiated in Chapter 6, are certainly more realistic.

Thus it can be concluded that the exclusion of a large number of capital goods, together with the use of unreasonably low percentage mark-ups, are the joint reasons why official estimates of capital formation in imported capital goods are understated.

All Bank Markazi Iran figures for domestically-produced capital goods are based exclusively on surveys made by the Ministry of Economy.[47] As is argued in Chapter 7, these estimates exclude all production of 'traditional' capital goods and this is the cause of the gross understatement in the Bank's estimates.[48]

Official estimates of capital formation in construction and other works have been based on a dichotomy between the public and private sectors of the economy. The first two Bank estimates used a sample survey of Tehran building permits to arrive at private sector expenditure on construction in the capital city. In the first study this result was then arbitrarily doubled to cover expenditure for the whole country: In the second it was grossed up by means of per capita construction expenditures. Because of the facts that much building is done without permit,[49] that permitted buildings are often not constructed,[50] and that no information on costs is given in the permits,[51] even

the Bank has admitted that these estimates are unsatisfactory.[52] They have been superceded by an excellent continuing survey of private urban construction, which is also utilized in the calculations of Part II.[53]

However, estimates for private rural construction are still arbitrary. Even in the most recent official estimates they are based on per capita construction expenditure in one small town, which is grossed up by the rural population to obtain annual estimates.[54] Although it is not possible to make a direct comparison between these estimates and those in Part II because of different coverage, it appears that the Bank's figures are overstated by as much as 250 per cent. This is calculated from an indirect comparison of the figures using the reasonable assumption that 80 per cent of all rural construction is in the form of residential dwellings.

But this overstatement is quantitatively far greater than that shown in Table 4-3. And since many of the construction figures in Part II are based on the same sources as the Bank's, understatement in other official sub-totals may be traced. It is found that there are two significant omissions in the official figures. Firstly, no mention is made of expenditure on construction and works by the Iranian Oil Operating Companies in any of the Bank's four studies, and it has not been possible to determine by other means

how this is included if indeed it is.[55] Secondly, it is apparent that although expenditure on private commercial buildings has been included by the Bank, expenditure on private industrial buildings has been omitted.[56]

The extremely low construction figures for 1959 in the official estimates of G.D.F.C.F. have been discussed in Chapter 8. They are the result of the inability of survey respondents to remember building completion dates accurately. It can be shown that the number of reported completions in 1959 is far lower than would be expected from other relevant data.[57]

The presentation of annual data by the Bank Markazi Iran must also be criticised. In the first place, the allocation of G.D.F.C.F. between public and private sectors is both inconsistent and misleading. The market value of imports of capital goods reported as exempt from duty is assumed by the Bank to represent public sector expenditure on such goods. Yet there is no reason to suppose that this is so. Organizations which import exempted goods include the I.O.O.C. and the corps diplomatique,[58] which can in no way be regarded as Iranian government organizations, as well as privately-owned enterprises which have obtained exemption certificates.[59] Also it is known that many government organizations resell imported goods to private persons through co-operatives or commissaries.[60] Moreover,

capital goods destined for use by government organizations are not always exempt from duty. One example is electrical telephone and telegraph equipment imported by the Ministry of Posts, Telegraph and Telephones, on which duty must be paid.[61] Finally, inconsistencies arise because of different coverage between the 'public' organizations which import exempted capital goods and those included in public sector construction expenditure totals.[62]

In the second place, the Bank does not make clear the concepts and definitions it adheres to. Nor does it describe its estimation procedures in sufficient detail. This is particularly true for public sector expenditures on construction, for which it is just stated that they 'were worked out of the general government budget as well as the budget appropriated for municipalities and government affiliated agencies'.[63] But since few of these budgets make a clear distinction between current and capital expenditures, the results obtained require more substantiation.

Improvement of Official Estimates

The continuing series of official estimates of G.D.F.C.F. can be improved considerably in three ways: by introduction of new source material, by improvements in existing source material, and by more careful methods of estimation and presentation.

There is a clear need for more information about dom-

estic production of 'traditional' capital goods, and about private construction expenditures in the rural areas. Bank Markazi Iran has, in one study, used a rural expenditure survey to estimate rural consumption expenditures,[64] and it may well be that an adaptation and continuation of this survey could best provide the necessary data. In particular, the following data are required:

a. A breakdown of 'housing expenditures' into expenditures on rent, repairs and maintenance, and new construction.

b. A breakdown of expenditures on durable goods between those used solely for household purposes and those used partially or entirely for any type of industrial activity.

c. A clarification of the origin of such durable goods: i.e., produced locally, factory-made, or imported.

Existing source material could be vastly improved with the co-operation of the statisticians who produce it.[65] This particularly applies to the annual budgeted and actual expenditures of all government organizations, which, by distinguishing between current and capital expenditures in consistent fashion, could greatly increase the reliability of capital formation estimates. The General Government Budget for 1964, 1965 and 1966 does, in fact, make this distinction for budgeted but not for actual expenditures.[66]

More co-operation between the statisticians of the Bank and those of the Ministry of Economy, and the use of comparable definitions of capital goods, could provide useful cross-checks on the relationship between c.i.f. values and market values of imported capital goods. And duplication of effort between the Bank's construction surveys and the Iranian Statistical Centre's housing census could also be avoided by more co-operation.[67]

The Bank's methods of estimation are subject to a number of criticisms which have been noted in this chapter and in Part II. These include the careless choice of tariff numbers for imported capital goods, unrealistic mark-ups of the c.i.f. values of these goods, disregard of exports of capital goods, and omission of certain types of construction expenditure. In all cases, adoption of the methods used in Part II would improve the official estimates.

It must be stressed that even if all the above-mentioned improvements were made, the margin of error in the annual G.D.F.C.F. totals could only be brought down to $\pm$ 20 per cent. However, this degree of reliability is satisfactory for most purposes. It could be improved only by the adoption of detailed surveys of individual economic sectors, such as those presently being carried out on private urban construction expenditures.[68]

Table 4-1: Summary Results of Adib-Soltani's Study of Private Sector Capital Formation, 1937-1959.

(million rials)

Year	Agric.	Industry	Construc.	Transport	Total
1937	10	75	275	45	405
1938	20	29	427	14	490
1939	34	18	661	8	721
1940	62	20	1023	20	1125
1941	47	12	703	35	797
1942	95	12	530	9	646
1943	135	11	492	10	647
1944	150	18	846	67	1080
1945	128	29	611	141	909
1946	112	94	567	273	1046
1947	167	100	1036	323	1626
1948	199	133	940	263	1535
1949	246	370	1195	551	2362
1950	325	841	691	397	2254
1951	339	915	1372	259	2884
1952	277	515	1447	47	2286
1953	280	679	1788	100	2847
1954	450	1042	2723	795	5011
1955	337	1267	4096	841	6541
1956	643	3984	4096	2052	10775
1957	878	5000	4975	2448	13300
1958	2341	8172	7149	3202	20865
1959	2711	14070	10175	3852	30807

Source: Adib-Soltani, S., 'Private Fixed Investments in Iran, 1937 through 1959', Tehran, unpublished, 1961, p.1.

Notes: The above estimates are in current prices.

Table 4-2: Comparison of G.D.F.C.F. Estimates by Bank Markazi Iran and those of this study.

(billion rials)

Year	BMI 1	BMI 2	BMI 3	BMI 4	Part II
1959	50.8	52.3	53.4	48.1	71.5
1960	-	56.1	63.6	56.5	71.3
1961	-	50.8	58.7	55.2	66.3
1962	-	-	48.8	43.7	62.4
1963	-	-	48.4	49.4	56.3
1964	-	-	-	63.9	83.4
1965	-	-	-	82.0	100.9

Sources: BMI 1 - Bank Markazi Iran, 'Bulletin', Vol. 1, No.5.

BMI 2 - Homayoon, B., 'National Income of Iran 1959-1961', Tehran, 1964.

BMI 3 - Bank Markazi Iran, 'Provisional Estimates of National Income of Iran, 1959-1963', Tehran, 1966.

BMI 4 - Bank Markazi Iran, 'National Income of Iran, 1959-1965', Tehran, 1968.

Part II - My estimates. See Chapter 5, below.

Notes: All estimates are in current prices.

Table 4-3: Comparison of G.D.F.C.F. Estimates by Major Components, 1959-1963, Current Prices.

(billion rials)

Year	Item	BMI 1	BMI 2	BMI 3	BMI 4	Part II
1959	a	20.4	22.7	20.9	21.8	28.7
	b	1.1	1.1	1.1		5.3
	c	15.0	13.8	16.6	15.3	37.5
	d	14.4	14.7	14.8	11.0	
1960	a		22.2	22.0	21.9	29.1
	b		1.5	1.5		6.3
	c		16.2	23.8	22.4	36.0
	d		16.2	16.3	12.3	
1961	a		19.4	18.4	19.2	24.3
	b		1.5	1.5		6.7
	c		13.8	23.5	24.2	35.3
	d		16.0	15.3	11.9	
1962	a			11.4	11.6	20.7
	b			1.5		6.8
	c			20.2	20.6	35.0
	d			15.7	11.5	
1963	a			10.6	13.1	17.6
	b			1.4		7.3
	c			22.7	22.2	31.4
	d			13.7	14.1	
1964	a				16.0	24.9
	b				4.2	9.3
	c				26.9	49.2
	d				16.9	
1965	a				21.2	34.9
	b				4.6	11.4
	c				30.2	54.6
	d				26.0	

Sources: As for Table 4-2, plus additional data for BMI 4 1965 and 1965 obtained privately from B. Homayoon, Bank Markazi Iran.

Notes:
a = imports of capital goods
b = domestically produced capital goods
c = private sector construction
d = public sector construction

Part II = my estimate. See Chapter 5, below.

Table 4-4: Comparison of C.I.F. Values of Imported Capital Goods, 1959-1963. Current Prices.

(million rials)

Year	BMI Estimate	Part II Estimate	BMI Understatement
1959	16788	18960	11 %
1960	17468	18572	6 %
1961	15031	15912	6 %
1962	9228	13379	31 %
1963	8405	11322	26 %

Sources: BMI Estimate: Bank Markazi Iran, 'Provisional Estimates of National Income of Iran, 1959-1963', Tehran, 1966.

Part II Estimate: My estimate. See Chapter 5, below.

Table 4-5: Comparison of Market Values of Imported Capital Goods - Percentage Components, 1959-1963.

Year	1959		1960		1961		1962		1963	
Item	BM	JB	BM	JB	BM	JB	BM	JB	BM	JB
C.i.f. value	80	66	80	64	82	66	81	65	79	65
Duties	7	6	7	8	6	7	7	7	8	8
Freight	2	1	2	1	1	1	2	1	1	1
Distribution	7	17	7	17	6	15	6	15	7	16
Installation	5	10	4	10	4	11	5	13	5	11
Market Value	100		100		100		100		100	

Sources: As for Table 4-4.
BM = Bank Markazi Iran.
JB = My estimate. See Chapter 6, below.

Notes: Columns may not total 100 exactly due to rounding.

Notes

1. Reported in Bank Markazi Iran, 'Bulletin', Volume 1, No.4, November-December 1962, Tehran, pp.3-4, 14.

2. Ibid., p.4.

3. See discussion in Chapter 10, below.

4. Somermeyer, W.H., 'First (Preliminary) Report on National Income and Related Statistics in Iran', Tehran, unpublished and restricted, 1962, Annexe 10, p.1.

5. Simonet, P.A., 'Rapport sur les Statistiques Economiques et Sociales de l'Iran', Tehran, unpublished, 1960, Tables 9-11.

6. Ibid., pp.4-5.

7. Ibid., p.1 and p.5.

8. Ibid., Table 11. Simonet expresses his sub-totals for land improvements, other construction and works, and machinery, etc., as a range, but uses the upper limit of these ranges to make up his total for G.D.F.C.F. of 46 b. rials, thus implying that this figure is a maximum. The minimum figure for G.D.F.C.F. would be 31 b. rials.

9. See discussion of Budget Method in Chapter 3, above.

10. Adib-Soltani, S., 'Domestic Capital Formation in Private Manufacturing Industry in Iran for the Period 1327-1336', Tehran, 1959, unpublished.

11. Adib-Soltani, S., 'Private Fixed Investments in Iran 1937-8 through 1959-60', Tehran, unpublished, 1961; this was later published in CENTO, 'Conference on National Income Accounting', 1962, pp.151-182.

12. Adib-Soltani, S., 'Private....', op. cit., p.4.

13. National Iranian Oil Company, 'Oil Agreement 1954', Tehran, undated, (1955?), p.13.

14. Adib-Soltani, S., 'Private....', op. cit., p.9.

15. Ibid., p.11.

16. CENTO, op. cit., p.180-181.

17. Ibid., p.181.

18. See discussion in Adib-Soltani, S., 'Domestic....', op.cit., pp.9-12.

19. See discussion in Chapter 6, below.

20. Adib-Soltani, S., 'Private....', op. cit., p.14, Table IV.

21. Ibid., p.20.

22. See Bharier, J., 'Banking and Economic Development in Iran', in Bankers Magazine, December 1967, p.297.

23. See Mortgage Bank of Iran, 'Balance Sheet 1963', Tehran, 1963, p.2.

24. CENTO, op. cit., pp.180-181; Also lengthy discussions with Sharif Adib-Soltani in Tehran between October 1966-July 1967.

25. See Chapter 9, below.

26. Iran, Ministry of Interior, General Department of Public Statistics, 'Report on the Industrial Census of Iran', Series 1-3, 23 volumes, Tehran, 1964-1965.

27. Iran, Ministry of Economy, 'Summary Results of Mining Survey', Tehran, undated (1963?).

28. Iran, Ministry of Economy, 'Report on Results of Annual Industrial Survey of Iran', Tehran, continuing from 1963; Also 'Trends in Industrial and Commercial Statistics', 1964, cont.

29. Information obtained privately from statisticians in the Ministry of Economy. But see Iran, Ministry of Economy, 'Report....', op. cit., for 1965, p.I.

30. Information from discussion with Engineer Shaheen, October 9, 1966.

31. Information from discussion with economists at the Industrial and Mining Bank of Iran who have to examine the balance sheets of industrial enterprises before granting loans.

32. Clarke, L.W., 'Final Report: Census of Industrial Production, Iran 1963', Tehran, 1964, unpublished

and restricted, p.11.

33. Kurtkan, F., 'A Discussion on Capital Formation and Rate of Growth with Case Studies on Iran and Turkey', Ankara, 1965.

34. Ahmadi, A., 'Twelve Years in Constructing a New Iran', Tehran, undated (1965?), p.41.

35. Information obtained privately from acquaintances of Ahmadi.

36. International Labor Office, 'Agricultural and Industrial Activity and Manpower in Iran', in International Labor Review, Volume LIX, No.5, May 1949, p.553.

37. Grunwald, K., and Ronall, J.O., 'Industrialization in the Middle East', New York, 1960, p.214.

38. Bank Markazi Iran, Economic Research Department, 'Changes in Iranian Companies 1931-1963', Tehran, (persian), 1965, p.23.

39. Bank Markazi Iran, 'Bulletin', Volume 1, No.4, November-December 1962, pp.3-16.

40. Homayoon, B., 'National Income of Iran 1959-1962', Tehran, 1964; paper prepared for ECAFE Seminar on National Accounting, Bangkok, 1964.

41. Bank Markazi Iran, Economic Research Department, 'Provisional Estimates of National Income of Iran 1959-1963', Tehran, 1966.

42. Bank Markazi Iran, Economic Research Department, 'National Income of Iran 1959-1965', Tehran, 1968.

43. This list was drawn up for me by Miss P. Vafai of the Economic Research Department of the Bank Markazi Iran.

44. Information privately obtained in conversation with M. Tajdar, Head of the National Income Section of the Bank Markazi Iran, January 4, 1967.

45. The average life of tyres in Iran is 18 months for truck tyres and 24 months for passenger car tyres. Information obtained from Mr. Nasseri, Manager of B.F. Goodrich Iran, in conversation, March 6, 1967.

46. Information from C. Myslicki, U.S.-A.I.D. Statistical

Adviser to Bank Markazi Iran, in conversation, January 9, 1967.

47. See, e.g., Bank Markazi Iran, Economic Research Department, 'Provisional Estimates....', op. cit., p.16.

48. See Chapter 7, below.

49. Homayoon, B., op. cit., p.16.

50. Information obtained in conversation from Dr. Kartuzian of the Statistical Bureau of the Mortgage Bank of Iran, January 18, 1967.

51. Homayoon, B., op. cit., p.17.

52. Information privately obtained in conversation with M. Tajdar, Head of the National Income Section of the Bank Markazi Iran, January 4, 1967.

53. Bank Markazi Iran, 'Bulletin', Volume 5, No.26, July-August 1966, continuing in later numbers.

54. Bank Markazi Iran, Provisional Estimates....', op. cit., p.17.

55. A letter from Kooros, A., Director of Economic Research Department, Bank Markazi Iran, (dated September 2, 1968) states that 'the expenditure on construction and works .... by the Iranian Oil Operating Companies is included in the estimates of capital formation. These expenditures are part of the public sector capital formation.' However, this information is unsatisfactory as it makes no mention of where the data are obtained from.

56. See discussion in Chapter 9, below.

57. The additions to the stock of urban houses in 1959 has been calculated as 54,000 in Table 8-5, below. This compares with the 52,000 calculated by the Bank Markazi (Table 8-4) for 1960. However, the Bank's figure for 1959 is only 29,000 and it is known that building activity in 1959 was equal if not greater than activity in 1960. See Bank Markazi Iran, 'Balance Sheet 1962', Tehran, 1962, p.21.

58. A full list of exempt institutions can be found in Iran, Ministry of Finance, 'Foreign Trade Statistics of Iran Yearbook', Appendix Issue, 1965, Tehran, 1966, (persian), pp.1-4.

59. See Bank Markazi Iran, 'Investors Guide to Iran', Tehran, 1966, p.3.

60. Bank Markazi Iran, 'Provisional Estimates....', op. cit., p.90.

61. International Customs Tariff Bureau, 'Bulletin International des Douanes', No.138, 'Iran', 8th Edition, Brussels, 1960, p.69.

62. While construction expenditures are for government organizations, expenditures on imported capital goods also include various non-government organizations. See text, above.

63. Bank Markazi Iran, 'Provisional....', op. cit., p.18.

64. Ibid., p.7. The survey is entitled Iran, Ministry of Interior, General Department of Public Statistics, 'Results of Rural Family Budget Expenditure', Tehran, undated (1964?), (persian).

65. The lack of co-operation is stressed in Clarke, L.W., op. cit., p.2.

66. See Iran, Plan Organization, 'General Government Budget', Tehran, (persian), for years 1964, 1965 and 1966.

67. Information obtained privately from C. Merzel, U.S.-A.I.D. Statistics Adviser to the Bank Markazi Iran, in conversation, April 18, 1967.

68. Bank Markazi Iran, 'Bulletin', Volume 5, No.26, July-August 1966, continuing.

PART TWO

CHAPTER FIVE

G.D.F.C.F. IN IRAN, 1900-1965

Gross Domestic Fixed Capital Formation for the period 1900-1965 is calculated in aggregate terms in Part II of this study. The calculation is made in four parts, with Chapters 6, 7, 8 and 9 dealing in turn with imported capital goods, domestically-produced capital goods, residential housing, and other building and works. In Chapter 10 a full discussion is made of the probable margin of error in the results. The final tables are presented at market prices in both current rials and in constant (1965) rials, the conversion being made by the Wholesale Price Index constructed and explained in Appendix G, and an index of urban building costs 1946-1965. Estimates of G.D.F.C.F. at factor cost are given at the end of this chapter.

The results given in this chapter constitute the first quantitative base for a study of the Iranian economy in the 20th century. Many of these results can be substantiated by qualitative accounts of incidents or trends. Indeed, the general agreement of historical data with the results presented here suggests that they are of a value greater than that implied in the estimated margin of error of the annual totals. It must be remembered, however, that some parts of the results, through assumptions made in calculation, are themselves based on historical information in the first place, and that a reconfirmation of this information would be naive circular argument. Consequently,

comparison of the results with historical data is only attempted where the historical information is independent of the results obtained.

The Aggregated Results

G.D.F.C.F. 1900-1965 is shown in current rials in Table 5-1 and Graph 5-1. The estimates for the same period in constant (1965) rials are given in Table 5-2 and in Graphs 5-2 and 5-3.

The outstanding feature of Graph 5-2 is the enormous rise in the level of capital formation during the periods 1953-1959 and 1963-1965. Capital formation in the first of these periods has often been compared unfavourably with the 1930s,[1] but it is clear that even in the peak year of 1938, the level of G.D.F.C.F. in constant prices was lower than in the trough of 1953. This conclusion does not, however, detract from the initial achievement in the 1920s and 1930s of lifting G.D.F.C.F. out of its rut for the first time. Indeed, if a date must be given for the start of industrial development in Iran, it is clear from the graph that 1926 and 1927 must be regarded as contenders.[2]

Graph 5-1, plotted on a log scale against time, indicates that the general growth trend of G.D.F.C.F. in current rials has a single turning point in the mid-1920s, and that the long-term growth rate after this point is considerably higher than the rate in the period 1900-1925. But the

years 1926-1965 saw two bouts of rapid inflation,[3] and Graph 5-3, also plotted on a log scale, shows that when allowance is made for the changing domestic value of the rial the years fall into five distinct growth periods: 1926-1930; 1931-1938; 1945-1949; 1953-1959; and 1963-1965. The overall growth trend of G.D.F.C.F. in each of these periods is similar, though slightly lower between 1931-1938 than in the other periods.

The historical evidence supporting these years as growth years is good, and may be summarised in terms of the availability of funds for expenditure on capital formation. After 1925 the financial administration of American adviser Dr. Millspaugh set the country's internal and external finances right[4] and provided for the first time clear budget allocations for capital expenditures.[5] From 1931 new taxes on tea and sugar,[6] as well as growing oil royalties,[7] a fluctuating customs surcharge[8] and some 'saving by inflation'[9] provided funds for a number of well-publicised government enterprises, including the completion of the Trans-Iranian Railway.[10] During the Second World War Iran built up funds from Allied expenditures in the country and these were spent in the years 1946-1949.[11] The resumption of oil revenues after 1953, together with a certain amount of deficit finance,[12] formed the financial backing of capital formation between 1953-1958, while the

period after 1963 is marked by stable prices[13] but rapidly-expanding oil revenues[14] and the spread of a sophisticated banking network.[15]

The four troughs which separate these five periods can also be satisfactorily explained by well-documented historical evidence - reports of events which are known to have had deleterious effects on capital formation. In 1931 an attempt was made to put the economy on a strict, centrally-controlled basis with the introduction of a Foreign Trade Monopoly combined with government direction of domestic trade, transport and industry.[16] In particular, the passage of an Act to monopolize the buying and selling of foreign exchange[17] brought foreign trade to a virtual standstill.[18] This Act was repealed within months[19] though other elements of state monopoly remained in existence and, by discouraging industrial activity in the private sector, were the probable cause of the lower rate of growth of G.D.F.C.F. in the 1930s compared with the four other periods.[20] The Second World War was the major cause of the second, extended trough,[21] although the fact that the decline of G.D.F.C.F. began after 1938 indicates that government cutbacks on capital formation[22] to combat inflation had already started to take effect before the war began.

The downswing from 1950-1953 is almost entirely ex-

plained by the nationalization of the oil industry which had the effect of stemming the flow of oil royalties and which led to political unrest.[23] Finally, the fall in G.D.F.C.F. from 1960-1963 was the result of a 'stabilization programme', recommended by the International Monetary Fund to protect both the domestic and external value of the currency.[24]

The Composition of Capital Formation

The proportion of G.D.F.C.F. taken each year by the four major components of capital formation is shown in Table 5-3 and illustrated in Graph 5-4. It can be seen that three of the five growth periods since 1925 (the 2nd, 4th and 5th) have been associated with increased proportions of imported capital goods and other building and works. The growth period 1925-1930 is associated with a vast increase in the proportion of imported capital goods alone, while the period 1946-1949 is associated with a boom in residential house-building. Thus no general statement can be made about the composition of G.D.F.C.F. during periods of growth.

In Chapters 7 and 8 a distinction is made between 'traditional' capital goods, including certain types of indigenous implements, traditional housing and other construction and works, and 'modern' capital goods, which also includes all imported capital goods and certain types

of other building and works. Table 5-4 and Graph 5-5 gives a percentage breakdown of G.D.F.C.F. between these two categories. During the years 1900-1925 'traditional' capital formation accounted for the lion's share of aggregate G.D.F.C.F. This was also the case in the years of the Second World War. Since these years were periods of the poorest G.D.F.C.F. performance it can be concluded that, when the level of capital formation is low, the proportion of expenditure on 'traditional' types of capital goods is high. This conclusion is substantiated by the figures (in Table 5-4) for 1931-2 and also, to some extent, by the figures for 1951-1953, which were the other periods of low G.D.F.C.F. performance.

Imported Capital Goods

Expenditure on imported capital goods is calculated in Chapter 6, and the summary results are given in Tables 5-1 and 5-2. It is found that the proportion of imported capital goods in aggregate G.D.F.C.F. reached an all-time peak in 1929 and was at a generally high level in the 1930s and the late 1950s. It was at its lowest level in the first 25 years of the century and the period of the Second World War.

In general the trend of imported capital goods, as shown in Graph 5-6, is the same as that of aggregate G.D.F.C.F. This is partly due to methods of calculation

which tie other components of capital formation to variables which are assumed not to fluctuate violently - such as population growth. But in the main it is because, as has been seen, growth and decline of capital formation is often associated with similar changes in its imported component. An exception to the general trend is found in the early 1950s and this may be explained by my valuation of imports at exchange rates far above the 'official rate' for this period. The reasons for this valuation procedure are given in Chapter 6.

Expenditure on imported capital goods at market prices includes a number of charges and mark-ups in addition to the c.i.f. value of the goods. These cover customs duties, freight and installation charges, and distributive expenses. In fact, as Graph 5-7 indicates, c.i.f. values accounted on average for only one third of the final expenditure in the years 1900-1925. This ratio increased during the 1930s and over the period 1946-1965 has stood at roughly two thirds. Thus a machine purchased from abroad for £1,000 in 1925 would have required another £2,000 spent on it before it was ready to contribute to the productive process. The identical machine purchased for the same price in 1965 would have needed only £500 additional expenditure.

The major reason for this change was the substantial lowering of freight rates in the 1930s following the expan-

sion of new road and rail networks.[25] From Graph 5-7 it can be seen that in the first quarter of the century freight charges alone accounted for a higher percentage of total expenditure than the c.i.f. value of capital goods. After 1929 the long-term trend of freight charges (as a proportion) is downward, and by 1965 they accounted for only one per cent of expenditure on imported capital goods. (The freight line on Graph 5-7 shows a sudden upward shift in 1941 and it has been discovered that this is the result of a heavy import of steel railway lines in that year.[26] Since the lines were presumably imported by the Allies[27] it is not clear why they appear in the section of the trade statistics reserved for items not exempt from duties. This point confirms the view expressed in Chapter 4 that the exempt-non-exempt division of the trade statistics cannot be equated to a public sector-private sector division.)

The relatively higher proportion of expenditure on installation in the 1930s and 1960s indicates that 'heavy machinery' played a more significant role in capital formation in these periods. The first major imports of textile machinery, electrical plant and rail equipment in the 1930s,[28] and the move towards heavy industrial plant, particularly in electricity generation and the oil industry, in the 1960s,[29] are historical events supporting these results.

Another interesting feature of Graph 5-7 is the rising trend in the proportion of expenditures taken by customs duties since 1936. When a law was passed in 1925 exempting industrial and agricultural machines from duty,[30] the effect was immediate though not blanket. However, the increased variety of machinery, and particularly of household durables which may or may not be used by the producer sector, has led over time to a situation in which duties are charged on most goods unless special exemption certificates are obtained.[31] And since, for all except government and influential private organizations, the process of obtaining these certificates is often more expensive than the duties themselves,[32] the duties are paid. In the 1960s such duties (which include Commercial Tax but no other port taxes) have been running at 7-8 per cent of total expenditure on imported capital goods.

The proportion of expenditure on distribution (which includes six types of expenditure listed in Chapter 6) is shown to have remained fairly constant over the 65-year period. This result is due mainly to the assumptions made in the calculations about the percentage commission taken by importing agents.

A study of Iranian exports of capital goods between 1900 and 1965 is also made in Chapter 6. It shows that these are insignificant, and that for most purposes gross

imports of capital goods are equivalent to net imports for the period under study.

Domestically Produced Capital Goods

The trend of expenditure on domestically-produced capital goods in constant prices follows the population trend until 1954 and exhibits a greater upward trend after that date. This is due to the methods of calculation employed in Chapter 7, which hide short-term fluctuations in the production of indigenous goods over most of the 65-year period.

It is interesting to note (from Table 5-1 and Graph 5-1) that the periods in which expenditure on indigenous capital goods has exceeded that on imported capital goods are 1900-1925 and 1940-1948. In 30 of these years there was little development in the economy. And in the years of growing capital formation 1946-1948 the major proportion of G.D.F.C.F. was in new housing rather than in machinery, plant and equipment. Thus it can be concluded that when efforts have been made to increase capital formation in machinery, plant and equipment, they have been directed towards increased imports rather than towards increased domestic production.

In the years after 1954 it is clear that production of 'modern' capital goods (which may also be regarded as direct substitutes for imported capital goods) has made

little impression on aggregate capital formation in machinery, plant and equipment. Indeed, even in the 'best' year (1965) the market value of domestically-produced 'modern' capital goods was only 13 per cent of that of imported capital goods.

At the same time, the market value of 'traditional' capital goods has remained high, being well over 30 per cent of the value of imported capital goods in the 1960s. No detailed breakdown of expenditure on different types of 'traditional' capital goods can be made, although, with a large proportion of the labour force employed in either agricultural or service occupations over the 65-year period,[33] it is highly likely that these activities account for most of such expenditure.

Residential Housing

Expenditure on capital formation in residential housing is calculated in Chapter 8. It is found that the introduction of 'modern' building materials and methods into the urban house-construction industry contributed to a boom which started in 1946 and was prolonged until 1959. Although this result, shown in Table 5-1 and Graph 5-1, is somewhat dependent on the assumptions made in the calculations, there is evidence that a combination of increased population growth[34] and a greater demand for replacement houses[35] also played large roles in the process which made residential

housing the leading contributor to G.D.F.C.F. in the 1940s and early 1950s. But although the building boom continued to 1959, and, after a slight setback, recommenced from 1963, its percentage contribution in G.D.F.C.F. has continued to decline, accounting for only 17 per cent of capital formation in 1965.

Residential housing was also the largest component of G.D.F.C.F. in the first quarter of the century and in the period of the Second World War. However, all housing was of the 'traditional' type in these years of poor performance in capital formation. Hence it may be concluded that, in the years up to 1945, the level of capital formation was inversely related to the percentage component of housing. This conclusion is partially confirmed by the findings that expenditure on residential housing (as a percentage of G.D.F.C.F.) was lowest in the two growth periods of the 1920s and 1930s.[36]

With urban and rural houses being generally constructed of similar materials in the period 1900-1945,[37] the fact that the rural population outnumbered the urban[38] meant that expenditure on rural housing exceeded that on urban housing. However, with a growing proportion of urban dwellers[39] and the use of more expensive building methods in the towns,[40] expenditures on house-building in the urban areas have far exceeded those in the rural areas since 1946.

Other Building and Works

In Chapter 9 all expenditure on G.D.F.C.F. other than that discussed in Chapters 6, 7 and 8 is taken into account, the final results being shown in Table 5-1 and Graph 5-1. These results summarize 11 other tables in which it can be seen that, for the most recent years of the study, Plan Organization, oil industry and private industrial and commercial expenditures comprise the major part of capital formation in other building and works. But the annual aggregate figures, in both constant and current rials as well as in percentage terms, tend to fluctuate widely. They are positively associated with growth of G.D.F.C.F. in four out of the five growth periods. As a rough generalization they may be taken to represent 'infrastructure' expenditure, being largely concerned with ports, dams, rail and air networks on the one hand, and shops, warehouses, factory-building and irrigation works on the other.

Throughout the 65-year period, private non-residential construction has been a major component of expenditure on other building and works, but, over time, government and oil industry spending has increased rapidly. Some of the outstanding results in Chapter 9 are the increase in the level of expenditure on private industrial buildings after 1958; the high level of capital formation by the Oil Oper-

ating Companies in comparison with their predecessor, the Anglo-Iranian Oil Company; the huge increases in Plan Organization expenditure after 1955; and the generally low level of other government expenditures except on new road and rail networks in the 1930s.

The Margin of Error

Chapter 10 discusses the probable margin of error in the results in terms of the constituent elements of the annual totals. It is estimated that the annual G.D.F.C.F. estimates are accurate to within 30 per cent for the years 1960-1965, and to within 40 per cent for all other years. Despite the low reliability of the annual totals, however, it is thought that the trends and relationships discussed in the present chapter are of sufficient reliability to provide a quantitative guide to the progress of the Iranian economy from 1900.

G.D.F.C.F. at Factor Cost

For some purposes it is necessary to use G.D.F.C.F. figures measured at factor cost rather than market prices. The difference between the two figures for any year consists of the total of indirect taxes on the capital goods in that year. Estimates of G.D.F.C.F. at factor cost in current rials are given in Table 5-5. These are based on Table 5-1, with adjustments made for customs duties and other indirect taxes. The customs duties and other port taxes

are taken directly from the figures of Chapter 6, while an arbitrary amount of 10 per cent is taken to represent the indirect tax component of the figures in Chapters 7, 8 and 9. For the years 1952-1955 an adjustment is made for the import surcharge imposed in those years.

Table 5-1: Gross Domestic Fixed Capital Formation, 1900-1965. Current Market Prices.

(million rials)

Year	Imported	Domestic	Housing	Other	Total
1900	6.0	108.4	140.0	42.7	297.1
1901	13.2	109.1	140.0	45.7	308.0
1902	12.1	109.9	135.0	44.0	301.0
1903	20.1	110.8	140.0	45.9	316.8
1904	19.2	111.5	140.0	46.2	316.9
1905	26.6	112.3	140.0	46.2	325.1
1906	22.2	113.1	140.0	45.8	321.1
1907	16.4	114.0	140.0	45.6	316.0
1908	16.5	114.7	140.0	45.7	316.9
1909	41.8	115.6	140.0	46.0	343.4
1910	33.7	116.4	143.0	48.1	341.2
1911	41.8	117.3	137.0	45.9	342.0
1912	32.9	118.0	143.0	47.3	341.2
1913	54.7	118.9	143.0	50.2	366.8
1914	60.6	114.3	133.0	50.4	358.3
1915	94.9	124.9	148.0	50.6	418.4
1916	62.5	133.7	157.0	51.8	405.0
1917	75.3	143.6	169.0	53.5	441.4
1918	54.7	114.6	167.0	52.2	418.5
1919	122.5	143.4	161.0	60.6	487.5
1920	83.3	125.1	148.0	68.6	425.0
1921	100.7	120.4	136.0	72.3	429.4
1922	104.9	138.4	158.0	85.5	486.8
1923	82.3	127.7	145.0	63.6	418.6
1924	121.7	137.9	155.0	65.1	479.7
1925	102.7	139.0	155.0	64.5	461.2
1926	188.2	142.3	145.0	63.1	538.6
1927	270.6	132.4	148.0	80.0	631.0
1928	210.9	128.3	98.0	99.3	536.5
1929	389.9	136.4	103.0	135.4	764.7
1930	428.2	143.5	106.0	204.3	882.0
1931	154.1	148.1	108.0	117.6	527.8
1932	213.5	155.5	111.0	120.1	600.1
1933	350.6	158.8	113.0	230.4	852.8
1934	348.9	181.2	127.0	261.6	918.7
1935	462.0	219.0	151.0	366.2	1198.2
1936	533.5	234.6	278.0	347.3	1393.4
1937	688.7	286.8	332.0	437.9	1745.4
1938	836.4	299.6	345.0	447.9	1928.9
1939	462.3	348.5	409.0	385.7	1605.5

Continued.....

Table 5-1 Continued:

Year	Imported	Domestic	Housing	Other	Total
1940	318.6	391.4	444.0	272.0	1426.0
1941	466.6	562.4	749.0	300.7	2078.7
1942	1079.6	1102.5	1468.0	693.9	4344.0
1943	232.6	1679.2	2232.0	945.5	5089.3
1944	468.1	1757.5	2359.0	932.3	5516.9
1945	960.3	1714.8	2263.0	969.2	5907.3
1946	1618.5	1623.3	5920.0	1908.6	11070.4
1947	1598.8	1877.9	5736.0	2250.7	11463.4
1948	1562.2	2059.5	6660.0	3394.5	13676.2
1949	2665.7	1833.3	6605.0	3619.3	14723.3
1950	2603.9	1775.6	5855.0	2973.2	13207.7
1951	2379.0	1942.6	6116.0	3187.9	13625.5
1952	2966.1	2116.7	6162.0	2581.8	13826.6
1953	4526.8	2646.4	7714.0	3212.5	18099.7
1954	8127.5	3154.2	10039.0	4194.4	25515.1
1955	11089.5	3341.2	10302.0	9412.9	34145.6
1956	11724.4	3553.7	11616.0	13633.8	40527.9
1957	13531.6	3760.7	13111.0	15811.3	46214.6
1958	22725.6	4194.3	13973.0	18685.6	59578.5
1959	28689.3	5335.0	15154.0	22344.5	71522.8
1960	29061.8	6252.0	13726.0	22271.0	71310.8
1961	24341.9	6650.0	12947.0	22384.9	66323.8
1962	20651.5	6827.0	10569.0	24379.4	62426.9
1963	17581.0	7272.6	11144.0	20288.3	56285.9
1964	24921.1	9285.0	15468.7	28712.0	78386.8
1965	34921.1	11374.0	16757.0	37850.0	100902.1

Sources: Tables 6-1, 7-3, 8-7 and 9-13.

Table 5-2: Gross Domestic Fixed Capital Formation, 1900-1965. Constant (1965) Rials.

(in millions)

Year	Imported	Domestic	Housing	Other	Total
1900	100.0	1806.7	2340.0	711.7	4958.4
1901	220.0	1818.3	2340.0	761.7	5140.0
1902	201.7	1831.7	2250.0	733.3	5016.7
1903	335.0	1846.7	2340.0	765.0	5286.7
1904	320.0	1858.3	2330.0	770.0	5278.3
1905	443.3	1871.7	2340.0	770.0	5425.0
1906	370.0	1885.0	2330.0	763.3	5348.3
1907	273.3	1900.0	2340.0	760.0	5273.3
1908	275.0	1911.7	2340.0	761.7	5288.4
1909	696.7	1926.7	2330.0	766.7	5720.1
1910	561.7	1940.0	2380.0	801.7	5683.4
1911	696.7	1955.0	2290.0	765.0	5706.7
1912	548.3	1966.7	2380.0	788.3	5683.3
1913	911.7	1981.7	2380.0	836.7	6110.1
1914	1063.2	2005.0	2330.0	884.0	6282.2
1915	1530.6	2014.5	2380.0	816.1	6741.2
1916	947.0	2025.7	2380.0	784.8	6137.5
1917	1075.7	2051.4	2420.0	764.3	6311.4
1918	781.4	2065.7	2380.0	745.7	5972.8
1919	1775.4	2078.2	2330.0	878.2	7061.8
1920	1388.3	2085.0	2460.0	1143.3	7076.6
1921	1766.7	2112.3	2380.0	1268.4	7527.4
1922	1613.8	2129.2	2420.0	1315.4	7478.4
1923	1371.7	2128.3	2420.0	1060.0	6980.0
1924	1901.6	2154.7	2420.0	1017.2	7493.5
1925	1604.7	2171.9	2420.0	1007.8	7204.4
1926	2895.4	2189.2	2220.0	970.8	8275.4
1927	4510.0	2206.7	2470.0	1333.3	10520.0
1928	3700.0	2250.9	1710.0	1742.1	9403.0
1929	6498.3	2273.3	1710.0	2256.7	12738.3
1930	6906.4	2314.5	1710.0	3295.1	14226.0
1931	2446.0	2278.5	1710.0	1866.7	8301.2
1932	3284.6	2392.3	1710.0	1847.7	9234.6
1933	5312.1	2406.1	1710.0	3490.9	12919.1
1934	4714.9	2448.7	1710.0	3535.1	12408.7
1935	5250.0	2488.6	1710.0	4161.4	13610.0
1936	5736.6	2522.6	2990.0	3734.4	14983.6
1937	6149.1	2560.7	2960.0	3909.8	15579.6
1938	7273.0	2605.2	3000.0	3894.8	16773.0
1939	3502.3	2640.1	3080.0	2921.2	12143.6

Continued.....

Table 5-2 Continued:

Year	Imported	Domestic	Housing	Other	Total
1940	2182.2	2680.8	3040.0	1863.0	9766.0
1941	2254.1	2712.1	3620.0	1452.6	10038.8
1942	2699.0	2756.3	3670.0	1734.8	10860.1
1943	387.7	2798.7	3720.0	1575.8	8482.2
1944	756.2	2839.2	3810.0	1506.1	8911.5
1945	1613.9	2882.0	3810.0	1628.9	9934.8
1946	2921.4	2930.1	10180.0	3445.2	19476.7
1947	2574.5	3024.0	9770.0	3624.3	18992.8
1948	2335.1	3078.4	10060.0	5073.9	20547.4
1949	4588.1	3155.4	10560.0	6229.4	24532.9
1950	4742.9	3234.2	10560.0	5415.7	23952.8
1951	4059.7	3315.0	10900.0	5440.1	23714.8
1952	4760.9	3397.6	10860.0	4144.1	23162.6
1953	5686.9	3324.6	11400.0	4035.8	24447.3
1954	9214.8	3576.2	11690.0	4755.5	29236.5
1955	13046.5	3930.8	11700.0	11074.0	39751.3
1956	12799.5	3879.6	12240.0	14884.1	43803.2
1957	15051.8	4183.2	13500.0	17587.6	50322.6
1958	25591.9	4723.3	14040.0	21042.3	65397.5
1959	31700.9	5895.0	14500.0	24690.1	76786.0
1960	31520.4	6780.9	13112.0	24155.1	75568.4
1961	26344.0	7196.9	13556.0	24226.0	71322.9
1962	22040.0	7286.0	11223.0	26018.6	66567.6
1963	18703.2	7736.8	12050.0	21583.3	60073.3
1964	25147.4	9369.3	15565.0	28972.7	79054.4
1965	34921.1	11374.0	16757.0	37850.0	100902.1

Sources: Tables 6-3, 7-3, 8-7, 9-13 and Appendix G.

Table 5-3: Composition of G.D.F.C.F. in Percentage Terms. 1900-1965.

Year	Imported	Domestic	Housing	Other	Total
1900	2	37	47	14	100
1901	4	35	45	15	100
1902	4	37	45	15	100
1903	6	35	44	14	100
1904	6	35	44	15	100
1905	8	35	43	14	100
1906	7	35	44	14	100
1907	5	36	44	14	100
1908	5	36	44	14	100
1909	12	34	41	13	100
1910	10	34	42	14	100
1911	12	34	40	13	100
1912	10	35	42	14	100
1913	15	32	39	14	100
1914	17	32	37	14	100
1915	23	30	35	12	100
1916	15	33	39	13	100
1917	17	33	38	12	100
1918	13	35	40	12	100
1919	25	29	33	12	100
1920	20	29	35	16	100
1921	24	28	32	17	100
1922	22	28	33	18	100
1923	20	31	35	15	100
1924	25	29	32	14	100
1925	22	30	34	14	100
1926	35	26	27	12	100
1927	43	21	23	13	100
1928	39	24	18	18	100
1929	51	18	13	18	100
1930	49	16	12	23	100
1931	29	28	20	22	100
1932	36	26	19	20	100
1933	41	19	13	27	100
1934	38	20	14	29	100
1935	38	18	13	30	100
1936	38	17	20	25	100
1937	39	16	19	25	100
1938	43	16	18	23	100
1939	29	22	25	24	100

Continued.....

Table 5-3 Continued:

Year	Imported	Domestic	Housing	Other	Total
1940	22	27	31	19	100
1941	22	27	36	14	100
1942	25	25	34	16	100
1943	5	33	44	19	100
1944	8	32	45	17	100
1945	16	29	38	16	100
1946	15	15	53	17	100
1947	14	16	50	20	100
1948	11	15	49	25	100
1949	18	12	45	25	100
1950	20	13	44	23	100
1951	17	14	45	23	100
1952	21	15	45	19	100
1953	25	15	43	18	100
1954	32	12	39	16	100
1955	33	10	30	28	100
1956	29	9	29	34	100
1957	29	8	28	34	100
1958	38	7	24	31	100
1959	40	7	21	31	100
1960	41	9	19	31	100
1961	37	10	19	34	100
1962	33	11	17	39	100
1963	31	13	20	36	100
1964	32	12	20	37	100
1965	35	11	17	38	100

Source: Table 5-1.

Note: Total of components may not add to 100 because of rounding.

Table 5-4: Composition of G.D.F.C.F. by 'Traditional' and 'Modern' Capital Goods in Percentage Terms, 1900-1965.

Year	Tradit.	Modern	Year	Tradit.	Modern
1900	98	2	1934	38	62
1901	94	6	1935	34	66
1902	94	6	1936	42	58
1903	94	6	1937	41	59
1904	92	8	1938	39	61
1905	90	10	1939	56	44
1906	92	8	1940	71	29
1907	93	7	1941	75	25
1908	93	7	1942	71	29
1909	87	13	1943	92	8
1910	88	12	1944	89	11
1911	86	14	1945	80	20
1912	89	11	1946	36	44
1913	83	17	1947	39	61
1914	80	20	1948	36	64
1915	76	24	1949	29	71
1916	83	17	1950	31	69
1917	82	18	1951	33	67
1918	86	14	1952	35	65
1919	72	28	1953	34	66
1920	74	26	1954	28	72
1921	69	31	1955	20	80
1922	70	30	1956	19	81
1923	75	25	1957	17	83
1924	70	30	1958	14	86
1925	73	27	1959	13	87
1926	61	39	1960	13	87
1927	51	49	1961	14	86
1928	48	52	1962	16	84
1929	35	65	1963	19	81
1930	32	68	1964	19	81
1931	55	45	1965	13	87
1932	50	50			
1933	36	64			

Sources: 'Traditional' percentage based on figures in Tables 7-2, 8-7 (adjusted for 'modern' housing), 9-2, 9-3.

Table 5-5: Gross Domestic Fixed Capital Formation, 1900-1965 at Factor Cost

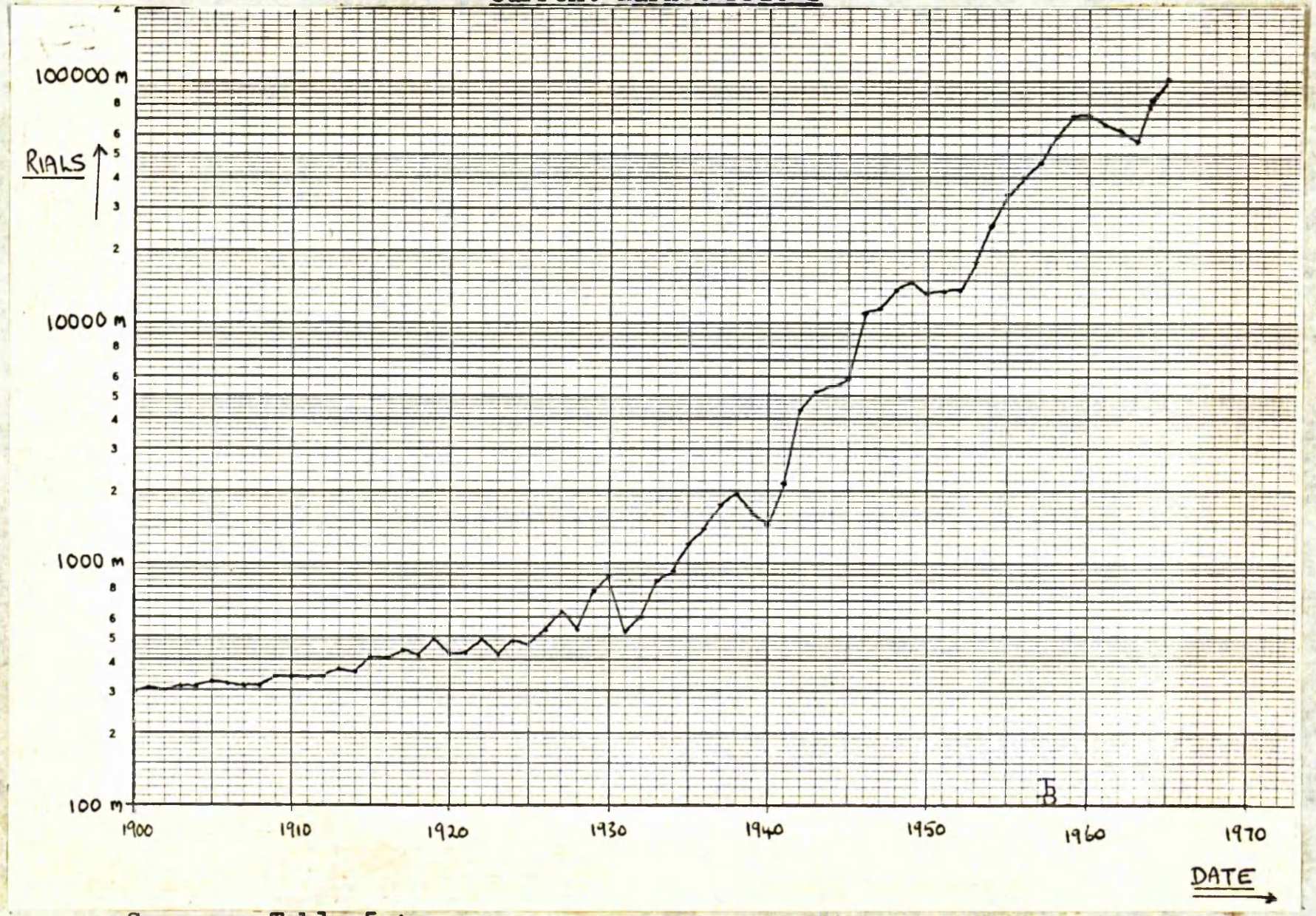
(in millions of current rials)

Year	Total	Year	Total
1900	268.0	1933	799.5
1901	278.5	1934	856.2
1902	272.0	1935	1121.8
1903	286.7	1936	1301.5
1904	286.7	1937	1617.1
1905	294.6	1938	1783.4
1906	290.7	1939	1473.9
1907	285.7	1940	1302.0
1908	286.6	1941	1882.8
1909	312.0	1942	4009.4
1910	309.5	1943	4599.5
1911	310.9	1944	4995.2
1912	309.7	1945	5387.2
1913	334.3	1946	10058.0
1914	327.3	1947	10405.0
1915	384.1	1948	12404.4
1916	369.5	1949	13399.6
1917	403.0	1950	11953.4
1918	381.0	1951	12289.5
1919	448.7	1952	11592.0
1920	389.6	1953	14960.6
1921	394.9	1954	20465.9
1922	447.4	1955	27463.3
1923	383.4	1956	36804.6
1924	441.6	1957	41967.3
1925	422.3	1958	54439.5
1926	498.8	1959	65582.9
1927	588.7	1960	64881.1
1928	501.9	1961	60419.3
1929	723.1	1962	56894.3
1930	831.1	1963	51072.6
1931	490.1	1964	70984.9
1932	559.1	1965	91690.9

Source: See text.

Graph 5-1: Gross Domestic Fixed Capital Formation 1900-1965

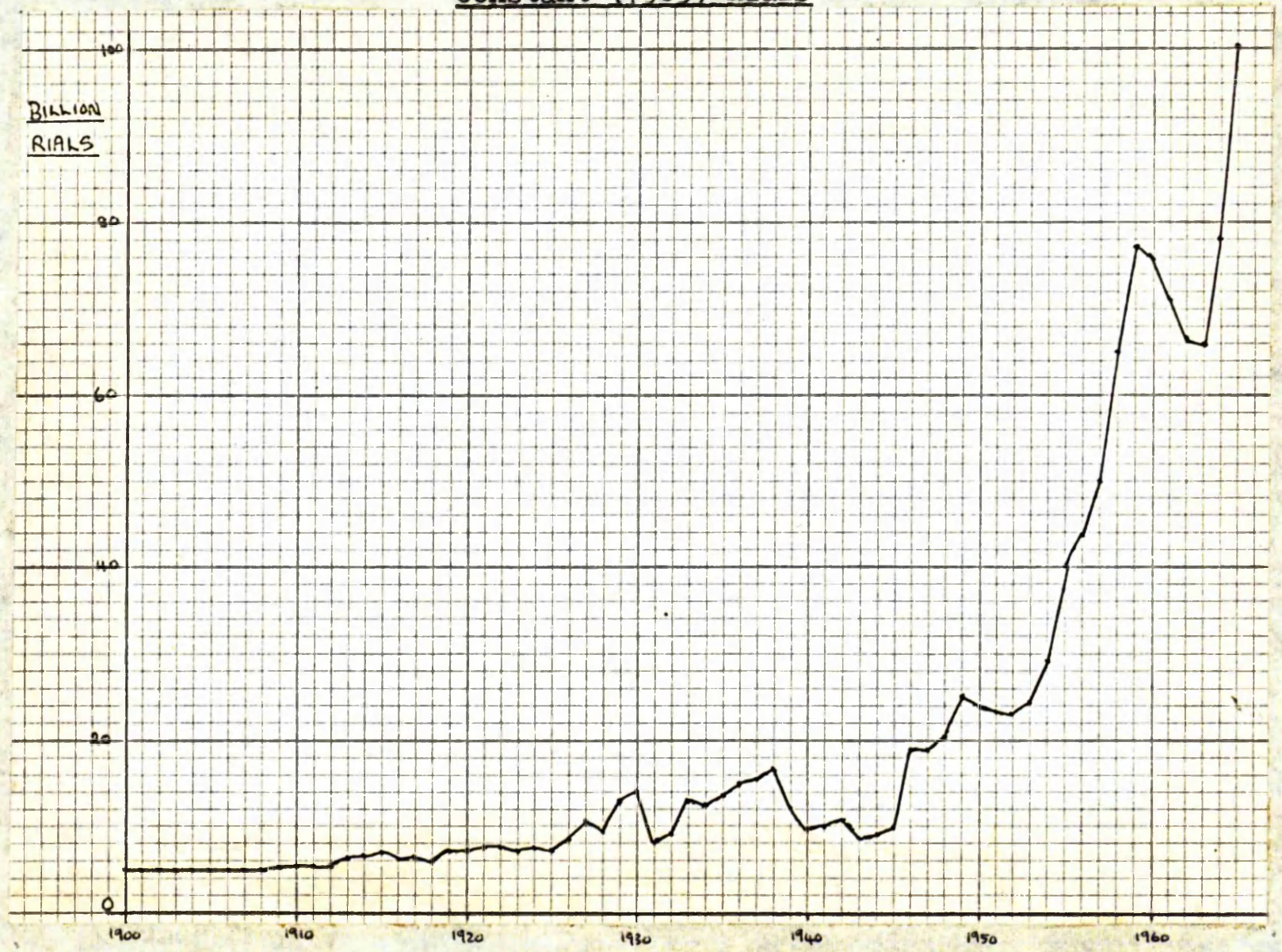
Current Market Prices



Source: Table 5-1.

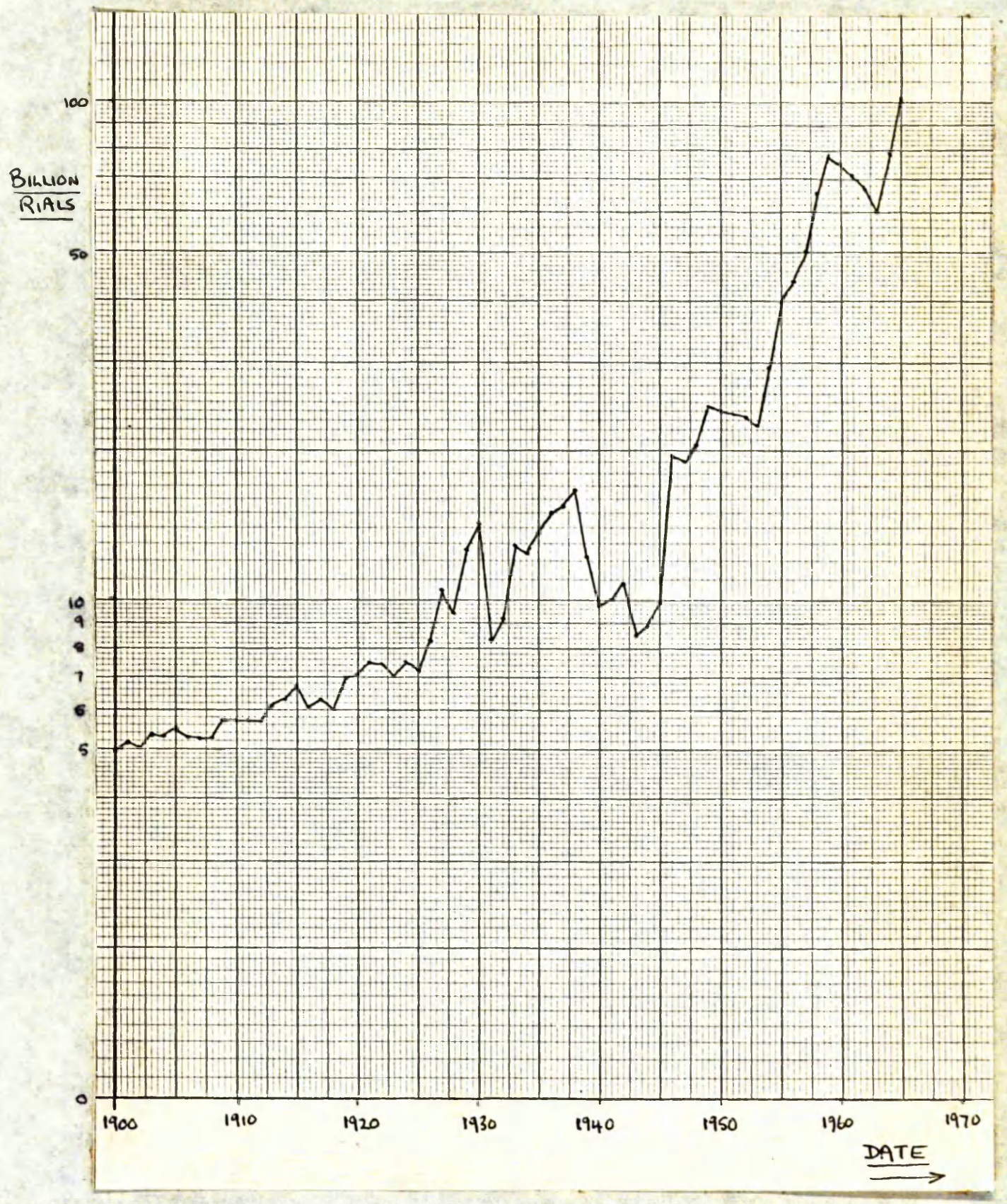
Graph 5-2: Gross Domestic Fixed Capital Formation 1900-1965

Constant (1965) Rials



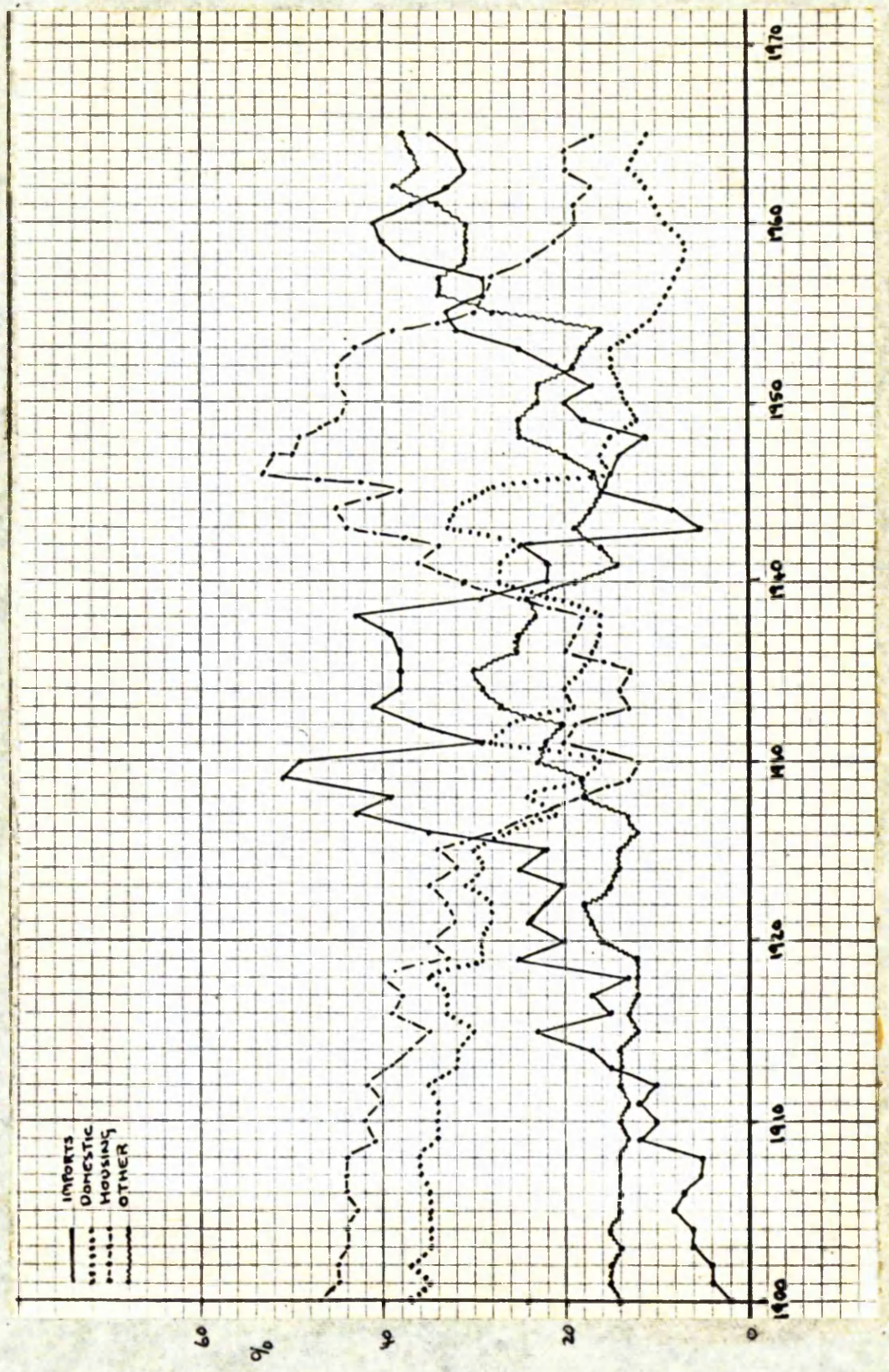
Source: Table 5-2.

Graph 5-3: Gross Domestic Fixed Capital Formation
1900-1965 (log scale). Constant (1965) Rials.



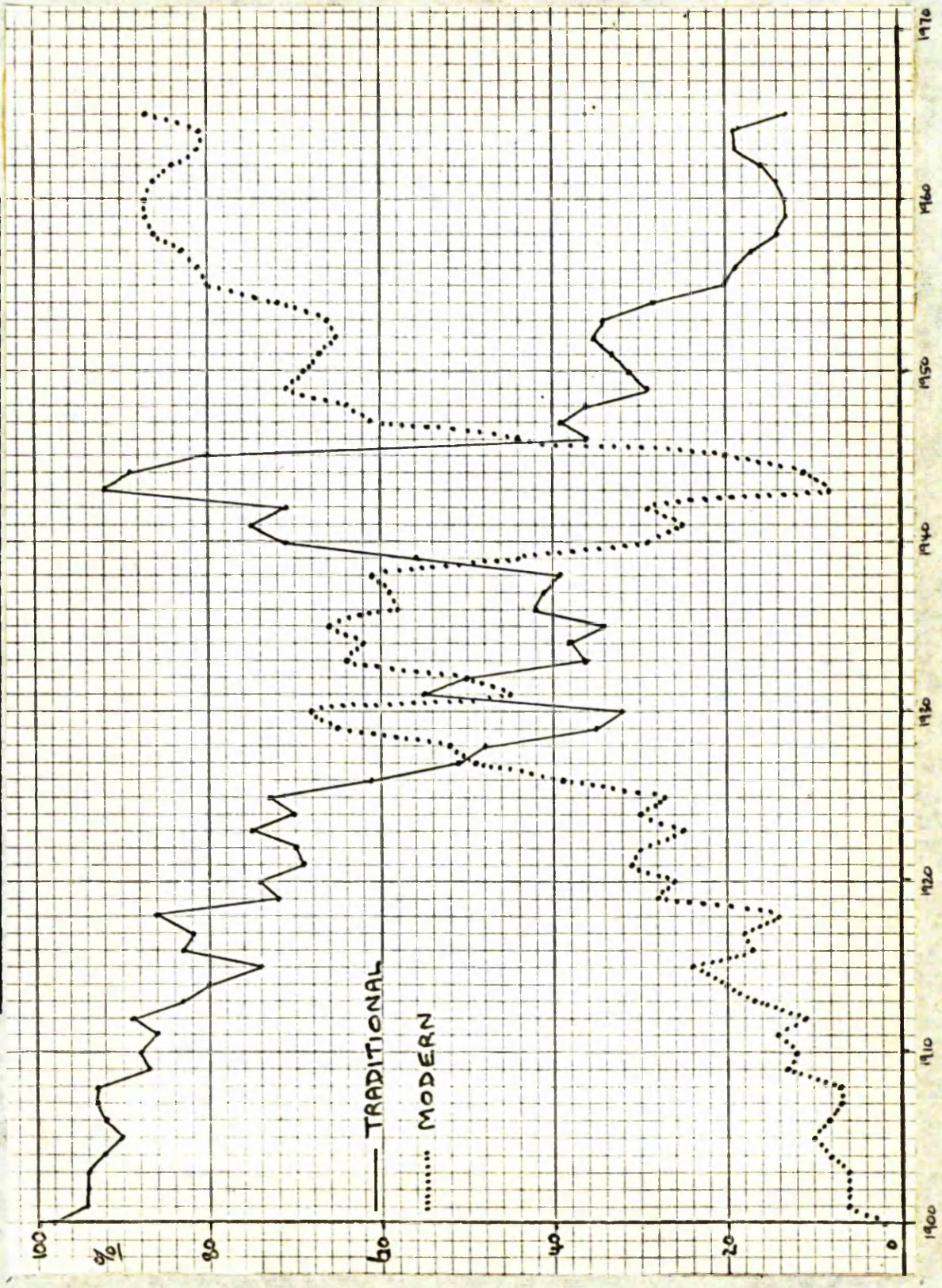
Source: Table 5-2.

Graph 5-4: Composition of G.D.F.C.F. in Percentage Terms 1900-1965.



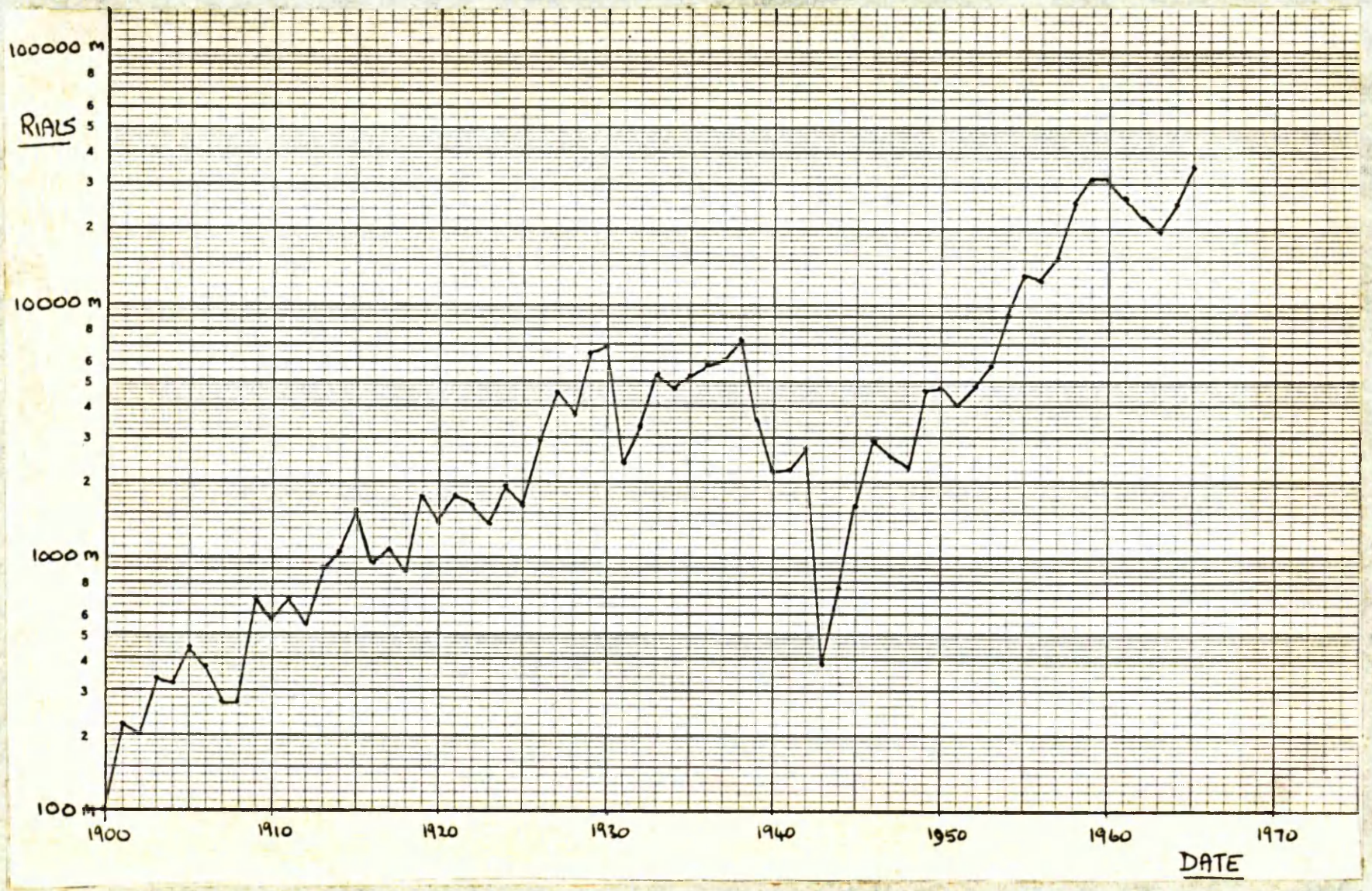
Source: Table 5-3.

Graph 5-5: Composition of G.D.F.C.F by 'Traditional' and 'Modern' Capital Goods 1900-1965 - in Percentage Terms



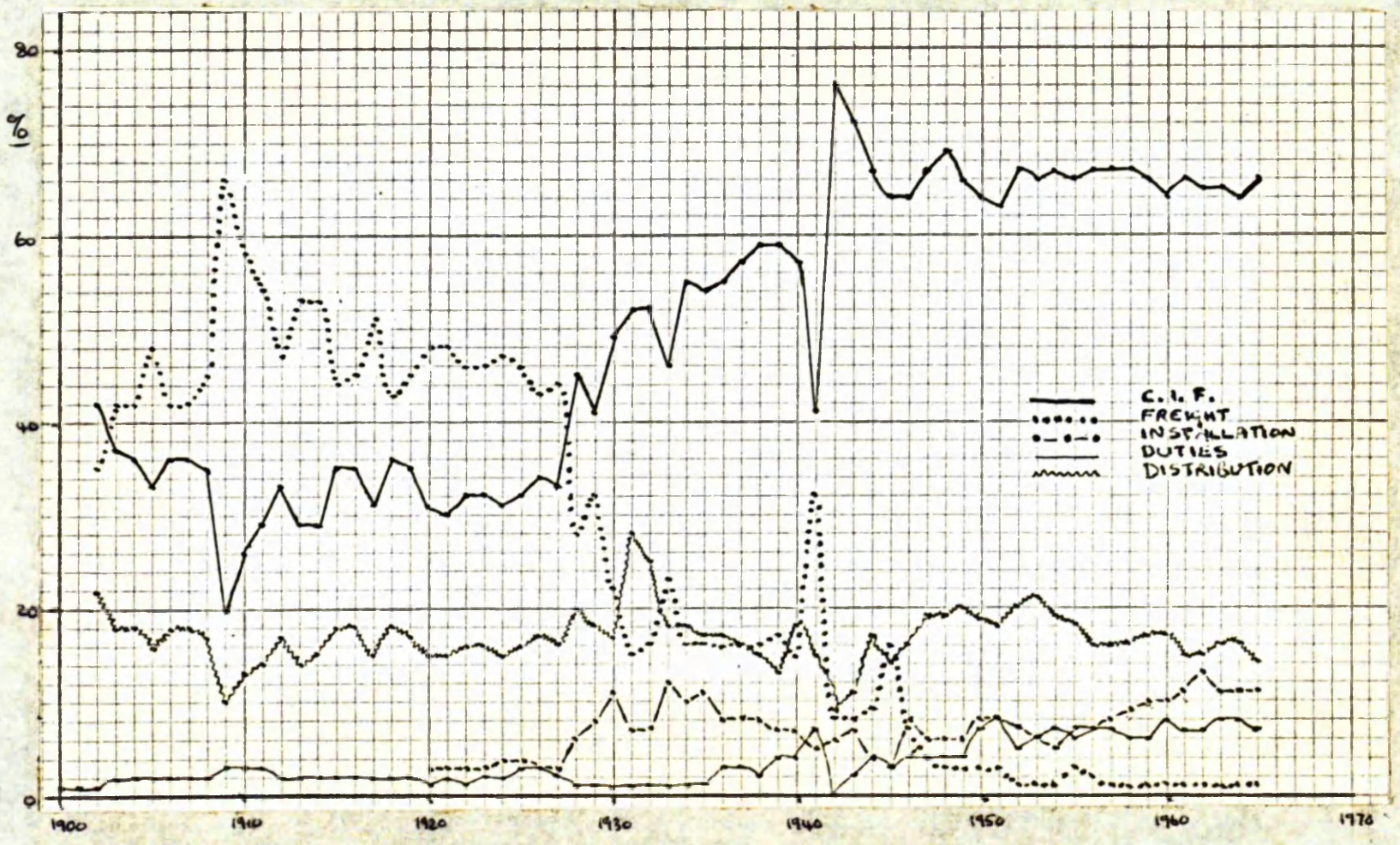
Source: Table 5-4.

Graph 5-6: G.D.F.C.F. in Imported Capital Goods 1900-1965.
Current Market Prices



Source: Table 6-3.

Graph 5-7: Composition of Market Values of Imported Capital Goods 1900-1965 - in Percentage Terms.



Source: Table 6-5.

Notes

1. See, for example, Baldwin, G.B., 'Planning and Development in Iran', Baltimore, 1967, p.195.

2. These dates are in accordance with almost all reports of the economy. See Organisation de Cooperation et de Developpement Economiques, 'Rapport Sur l'Economie de l'Iran', Paris, 1967, p.2.

3. See Appendix G, 'Wholesale Price Index 1900-1965'.

4. Millspaugh, A.C., 'The American Task in Persia', New York, 1925.

5. Though in spite of the Budget Law 'the Government of Iran has not been able to draw a clear distinction between its regular and capital expenditures.' Farmanfarma, A., 'Budgetary Administration and Procedure in Iran', University of South California thesis, unpublished, 1958, p.128.

6. Simmonds, S., 'Economic Conditions in Iran', Department of Overseas Trade, London, 1935, p.53.

7. Annual accounts of the Anglo-Persian Oil Company, 1930-1939, at Companies House, London.

8. Simmonds, S., op. cit., p.53.

9. Baldwin, G.B., op. cit., pp.13-14.

10. Ibid., pp.11-14.

11. Iran, Plan Organization, Planning Division, 'Outline of the Third Plan', Tehran, 1966, p.1.

12. Baldwin, G.B., op. cit., p.40.

13. See Appendix G.

14. Annual accounts of the Iranian Oil Operating Companies, 1963 ff.

15. Bharier, J., 'Banking and Economic Development in Iran', Bankers' Magazine, December 1967, pp.295-301.

16. Grunwald, K., and Ronall, J., 'Industrialization in the Middle East', New York, 1960, p.212.

17. Simmonds, S., op. cit., p.51.

18. Ibid., p.52.

19. Imperial Bank of Persia, Minutes of Annual General Meeting, 1932. Obtained from files of the British Bank of the Middle East.

20. There is some evidence also that the world depression had deleterious effects on the Iranian economy. See ibid. for 1932.

21. Iran, Plan Organization, op. cit., p.1.

22. Imperial Bank of Iran, Minutes of Annual General Meetings for 1937 and 1938. From files of British Bank of the Middle East.

23. Frye, R.N., 'Iran', London, 1960, pp.91 ff.

24. Baldwin, G.B., op. cit., p.40.

25. Bank Melli Iran, 'Bulletin', No.25, p.208.

26. Iranian Trade Statistics 1941, Tariff no.1494.

27. The Railway Gazette, 'British Work on Persian Railways', Issues of February 2 and 16, 1945, pp.3-4.

28. Imperial Bank of Persia, op. cit., for relevant years.

29. Bank Markazi Iran, 'Investors' Guide to Iran', Tehran, 1966, pp.168 ff.

30. International Customs Tariff Bureau, 'Bulletin', 2nd Supplement to No.138, Third Edition.

31. Bank Markazi Iran, op. cit., p.219 ff.

32. See Chapter 6, below.

33. Yaganegi, E.B., 'Recent Financial and Monetary History of Persia', New York, 1934, p.4; Also Iran, Ministry of Interior, General Department of Public Statistics, 'National and Province Statistics of the First Census of Iran', Volume 2, Tehran, 1962, pp.326, ff.

34. See Appendix A, below, published in Population Studies, July 1968.

35. See Chapter 8, below.

36. The indirect methods used in calculating expenditure on residential building will, of course, have some distorting effects on the figures in this section. See Chapter 8.

37. There is no evidence of significant numbers of 'modern' houses being built before 1946 except by the Anglo-Iranian Oil Company. See International Labor Office, 'Labor Conditions in the Oil Industry in Iran', Geneva, 1950, p.33.

38. See Chapter 8, below.

39. See Chapter 8, below.

40. Overseas Consultants Inc., 'Report on Seven Year Development Plan for the Plan Organization of the Imperial Government of Iran', New York, 1949, Vol.3, pp.236-7.

CHAPTER SIX

IMPORTS OF CAPITAL GOODS

The value of Gross Domestic Fixed Capital Formation in imported capital goods is given by the c.i.f. value of these goods, plus import duties, inland freight charges, and distribution and installation expenses.

In this chapter data for the period 1900-1965 are presented, together with a discussion of the empirical difficulties faced in the calculation and the assumptions employed. For the years before 1959 no previous estimation of this series has been made. The Central Bank of Iran has produced a series for the years 1959-1965,[1] and divergences in concepts, methods and results between that series and the last seven years of my series have been discussed in Chapter 4.

The results are given here in current market prices, and in prices deflated by a general wholesale index of domestic prices. The revelance of this deflator for the purposes of this dissertation has been discussed in Chapter 2. A 65-year series of the volume and value of exports of capital goods is included, but it is found to have little quantitative significance. For present purposes, gross imports and net imports of capital goods are the same.

Basic data for the series were obtained from the foreign trade statistics of Iran, published in Persian, French or English, under a number of different titles, since 1900.[2] The reliability of these statistics is dis-

cussed at length in Chapter 10.

The Foreign Trade Statistics

A number of practical difficulties have arisen from the need to use the foreign trade statistics of Iran:

a. No library in Britain or Iran contains the full set of annual trade statistics from 1900-1965. It has therefore been necessary to combine the resources of the libraries in the State Paper Room of the British Museum, the Board of Trade, the Iranian Embassy in London, and the Trade Statistics Library of the Iranian Ministry of Finance.

b. The most recent Iranian trade statistics quote the weight, the number of units and the value of each item imported. But for the first 36 years of the study, the weight was given for some items and the number of units for others. Thus the weight of capital goods imported only forms consistent series from 1938 to 1965.[3]

c. Up to 1934 the weight of imported items was quoted in mans (batmans). One man (batman) equals 2.97 kg.[4] All figures given in mans have been converted to kilograms by this multiplier.

d. From 1931 to 1938 a change was made in the annual coverage of statistics from the Iranian calendar year (which runs from March 21 to March 20) to an

'Economic Year' (June 21 to June 20).[5] To ensure the comparability of annual data, a simple adjustment has been made to statistics for the years in question. Figures for any Iranian calendar year are obtained by adding 75 per cent of the figures for the economic year with a nine-month overlap to 25 per cent of the figures for the (previous) economic year with a three-month overlap. Iranian calendar years are represented here by the nearest western calendar year. Thus, 1965 represents the Iranian calendar year March 21, 1965 to March 20, 1966.

e. During the oil nationalization period of the early 1950s, importers were ordered to pay a surcharge on their foreign exchange purchases from banks. This had the effect of increasing by two to three times the prices of imports in local currency.[6] The figures in this chapter for the years 1952-1955 refer to values of imports inclusive of the foreign exchange surcharge. These are the most relevant values for the present study, as they represent market prices actually paid by importers. However, allowance is made for this surcharge in the summary estimates of G.D.F.C.F. at factor cost in Chapter 5.[7]

f. Throughout the 65-year period, there has been a

distinction in the trade statistics between those imported items which are subject to customs duties and those which are not.[8] Up to 1959, exempt items were not included in the total import statistics, but were included in a separate section under the title of the agency which imported them. Exemption was granted according to the status of the importing agency, and the chief importers under this category have been the expatriate oil and bank concessionnaires, government organizations and the Corps Diplomatique. This system of classification made a lengthy process of compilation necessary to extract capital goods imports by their tariff numbers from the data for each exempt importing agency, and to sum the volume and value figures obtained for each item.[9]

g. For the years 1900-1927 (with the exception of 1924), no details at all were given of imports exempt from customs duty, and some students do not appear to have appreciated this point.[10] However, it has been possible to fill this gap by means of the capital account of the Anglo-Persian Oil Company, which accounted for 79 per cent of exempted capital goods imports in 1924, the year in which details are available. The oil company accounts are available from 1910 onwards,[11] and a rough allocation of the company's capital stock

in 1910 is made to cover capital formation in the years of preliminary oil exploration from 1901-1909.[12] Imports of other exempted capital goods for the years 1900-1927 are calculated by means of the ratio between exempt imports of capital goods (excluding those of APOC) and non-exempt imports for the year 1924. This ratio is assumed to stay the same for all years in which data are lacking. Full details of this estimation of exempt imports are given in Appendix F.

Assumptions Made

The use of trade statistics for the purpose of estimating G.D.F.C.F. in imported capital goods implies the acceptance of two basic assumptions:

a. That all capital goods imported are actually employed by the producer sector in the production process and are not left idle or uninstalled.

b. That all capital goods imported in a given year are installed in that year.

There is some evidence to indicate that machinery, plant and equipment ordered by Iranian agents or producers is sometimes left unclaimed in customs warehouses,[13] or, if cleared from customs, left inoperative in a factory.[14] Since the trade statistics refer to goods cleared from customs, the first case appears to be of little importance.

Nevertheless, since goods remaining unclaimed for nine months are sold by auction,[15] and since it is not clear whether such items do in fact appear in the trade data,[16] the effect on the aggregate figures is unknown. The second case arises for a number of reasons, included among which are the mistaken advice given by the vast number of consulting firms operating in Iran, inability of producers to understand instructions printed in a foreign language, and unscrupulous selling techniques of salesmen.[17] These items are treated in the same way as capital goods which are installed and then operated at only a fraction of their full capacity. Whether installed or not, all capital goods imported are included in the flow of installed capital goods to producers even though they may just be additions to the stock of uninstalled capital goods in the hands of producers.[18]

The question of the time-lag between the clearance of an item from customs and its installation by a producer is ignored here by assuming that all capital goods imported are installed in the year in which they appear in the trade statistics. In fact the time-lag may be as much as six-months (and infinite for the capital goods which are never installed).[19] Adib-Soltani in his 10-year study of 'private sector' machinery imports finds that the use of a simple six-month time-lag makes no difference to the

trend of his results.[20] But an examination of the monthly pattern of imports into Iran shows that rather more than 50 per cent of imports by volume and value were cleared from customs in the second half of the year. This implies that a simple time-lag is unsatisfactory. Graph 6-1 illustrates the monthly pattern of imports into Iran for those years and groups of items for which data exist.

Since, as will be seen later in this chapter, certain capital goods require no installation, while others need different amounts of time and expense before they are installed, different time-lags are required for different categories of capital goods. And since this requires detailed monthly statistics on items cleared from customs, adjustments for time-lags have not been possible in this study.[21] One further point to be made is that the end-of-year bunching of capital goods imports may be a reflection of the desire to install new plant by the first of the new year. In this case it may well be that items which 'normally' take, say, three months to install, are installed in a much shorter time at the end of the year to meet the calendar deadline.[22]

Potential Capital Goods

The commodity-flow approach to the estimation of capital formation requires a selection of those items from production and import statistics which are expected to be

used by the producer sector as capital goods.[23] As a first stage in this selection process, a list of 'potential capital goods' is drawn up from the Iranian tariff lists. Feinstein uses a similar method and describes potential capital goods as those which warrant further examination as potential components of the (import) supply of capital goods.[24]

According to the definitions of capital goods used, all potential capital goods have an expected life of one year or more.[25] They do not comprise all imports with this minimum expected life however, as many items such as clothing, jewellery, sports goods, musical instruments, etc., are usually assumed to be destined for use by the non-producer sector only.

Since 1900, ten major different systems of tariff classification have been used in Iran, and within the periods of each classification, a number of minor changes have occurred. It is worth mentioning that, although Iran has pledged support to international systems of tariff nomenclature, the classification systems are uniquely Iranian.[26]

The potential capital goods selected for each of the ten periods are listed in Appendix C by means of their tariff numbers. Full definitions of each item can be found in the Iranian trade statistics for the relevant

periods. The minor changes have been ignored in these lists as they generally apply to only a very small proportion of the total items, and are often just printing errors.

Exclusions

From the list of potential capital goods for each of the ten periods, certain percentage exclusions have been made (the same percentage being used for both volume and value figures). These exclusions represent the percentage of each potential capital good assumed to be destined for use by the non-producer sector. A complete list of the number and size of these exclusions is shown in Appendix C against the ten lists of potential capital goods.

In most cases the percentages stated are arbitrary and follow the same pattern throughout the 65-year period, thus ignoring the possibility that such percentages may change over time. However, the more detailed tariff classification of the later years of the study does mean that such exclusions are made from a less general list of potential capital goods. In this way the degree of arbitrariness is consequently reduced over time.

The choice of exclusion percentages is a highly subjective process and the defence of individual percentages must inevitably be based on personal experience. The Central Bank of Iran has been unsuccessful in trying to

use data on family expenditure and vehicle registration statistics,[27] and does in fact use similar percentages to the ones employed here.[28] In the case of vehicle registration it is clear that use of the ratio of cars with commercial registration, such as taxis, etc., to the total number of registered cars will under-state capital formation in cars as none of the cars used by producers other than hire-car enterprises will be included.

The Central Bank has also tried to use the distinction between exempt and non-exempt imports to estimate exclusion percentages,[29] using a general rule that exempt items are more likely to be used by the producer sector. Yet there is no evidence that this is true, and in fact mention is made of the way that some of these goods are resold to employees of the exempt organizations for private use.[30] In this study no distinction is made between exempt and non-exempt items in the calculation of exclusion percentages. Not even items imported by the Corps Diplomatique are treated differently to other items because the ultimate destination of such items is unknown.[31]

For present purposes the following basic principles on exclusion percentages are adhered to, as it is believed that they apply to the Iranian situation, at least for the most recent years of the study. To account for use by the non-producer sector

90 per cent of all household cutlery and very small durable goods is excluded.

50 per cent of all motor cars, motor bicycles and bicycles (and their parts) is excluded.

50 per cent of stoves, heaters, radiators, refrigerators and similar items is excluded.

30 per cent of portable durable goods such as fruit juicers, food mixers, etc. is excluded.

Items which do not fall into any of these general categories are treated according to their individual cases.

Duties

The duties payable at customs in Iran consist of customs duties, which have been in existence throughout the 65-year period, road taxes (used in the 1940s), Commercial Tax, introduced in 1957 and still in existence, and a number of other small taxes.[32]

For years since 1957, the rates of customs duties and Commercial Tax have been obtained from the annual General Import-Export Regulations of Iran.[33] For years before 1957, eight editions of the Bulletin International des Douanes for Iran have been used.[34] These eight editions cover eight different periods of tariff classification from 1900 to 1960, and are reliable because there has generally been no change in rates within these periods.[35] Indeed it appears to have been the case in Iran that a change in

rates of duty has signalled a change in tariff classification.[36]

The amount of Customs Duty and Commercial and Road Taxes paid on imported capital goods has been calculated each year by applying the published rates of duty for each item of non-exempt capital goods to the volume or value of these goods.

Problems of Estimating Duties Paid

The addition of estimated customs duties and taxes to c.i.f. values when calculating G.D.F.C.F. in imported capital goods does imply acceptance of the assumption that these duties are actually paid. For 1965, the final year of the study, it is possible to test this assumption, and to measure the 'efficiency of collection' for customs duties and Commercial Tax on potential capital goods.[37]

The full results of this test are presented in Appendix E, and the major conclusions reached are that, for 1965

a. The customs duty (when taken on all items together and given that the tariff classification of items is correct) is 100 per cent efficient.
b. The Commercial Tax (on the same basis) is 75 per cent efficient.
c. Overall efficiency is 88 per cent for both these taxes together.
d. In 44 cases (out of the total of 617) customs duties

were collected when they should not have been. Commercial Tax was collected on 141 items which were supposed to be free of tax.

e. If these unauthorized collections are ignored, the customs duty is 99 per cent efficient and the Commercial Tax 69 per cent efficient, the efficiency of both together being 85 per cent.

If it is assumed that the overall 88 per cent efficiency ratio applies to all years in the study, then the amount of customs duties and taxes included in G.D.F.C.F. in imported capital goods will be overstated by about 11 per cent for each year.

However, it is unlikely that the efficiency ratio has been stable throughout the period.[38] After Belgian officials took over the operation of Iranian customs in 1898,[39] they abolished the system of customs farming and the multiplicity of internal road tolls and octrois (although these remained in force in East Persia for three decades more).[40] They brought in new weighing equipment and increased border patrols.[41] As a consequence it could be reported in 1925 that the efficiency of duty collection (with constant rates of duty) had improved considerably.[42] This is illustrated in Graph 6-2 and implies that duty was evaded rather more regularly in the early years of the century. It can be assumed that this improvement continued until 1934, when

the Belgians were dismissed from their posts.[43]

Since the mid-1920s, the stated policy of the Iranian government has been to exempt from duty all imports of machinery.[44] Even allowing for the difference in definitions between capital goods (as used in this study) and 'machinery', it is clear that this policy has not been fully implemented. The fact that duties have been paid (see Table 6-5) implies that the procedures for obtaining exemption from duty have been unsatisfactory, and probably more expensive than the duties themselves.[45]

Difficulties in the calculation of duties have arisen for two short periods within the study:

a. From 1928 to 1936, customs duties were collected in 'gold rials', while imports were valued in 'silver rials' (silver being the base of the Iranian currency until 1938).[46] This method of collection amounted to a surcharge on duties which fluctuated with the changing price of silver with respect to gold. In this study 'silver rials' have been used to estimate duty paid, and the amount of total duty is therefore subject to a higher degree of error in these years than in other years.

b. From 1952 to 1955, importers were required to pay a surcharge on their purchases of foreign exchange.[47] However, duties were apparently calculated on the

c.i.f. prices without this surcharge.[48] If this were the case, then the total amount of duties calculated for these years will overstate the duties actually paid, as they have been calculated from c.i.f. prices which include the surcharge.

Minor Duties and Taxes

Apart from customs duties and Commercial Tax, there are a number of other small taxes in existence. These include municipality taxes, health and charity taxes, export promotion duties, port and stamp charges and a variety of other fees.[49]

For 1965 it is possible to estimate the importance of these charges and taxes with respect to c.i.f. values of total imports.[50] It is found that they equal about three per cent of c.i.f. values. The Central Bank of Iran suggests 8 per cent of c.i.f. value will cover these various charges[51] (although this is not taken into account in its study of capital formation!),[52] while the commercial counsellor of an embassy in Iran puts the figure at 4 per cent,[53] and two merchants independently use 5 per cent in their calculations.[54] It is possible that the differences arise from different assumptions about the weight of imports and therefore about different porterage fees.

Since items which are exempt from duties are also expected to pay most of these small charges,[55] it has been

decided to include all these charges in the percentage mark-up of c.i.f. prices for distribution expenses, rather than in the calculations of duties paid. This method overcomes the difficulties involved in estimating the small charges for the earlier part of the study, for which data are scarce.[56] In other words, duties calculated refer only to customs duties, and, for the relevant years, road taxes and Commercial Tax.

Freight Charges

Freight charges to be added to c.i.f. values are calculated by means of data on the weight of capital goods imported and the average distance over which they travel from customs warehouse to place of installation (or regular base in the case of non-installed items such as vehicles). For later years in the study an assumption has been made about the quantity of goods carried by rail compared with the quantity carried by road.

Three major methods of inland transport have been used in Iran during the period 1900-1965; pack animals carried many imports from 1900-1930,[57] trucks started regular services from the mid 1920s,[58] while the trunk line of the Trans-Iranian railway was completed in 1938.[59] Inland waterway transport is restricted to the Khorramshahr-Ahwaz stretch of the Karun River and was used extensively by the oil company in the early years of the century.[60]

The change from pack-transport to trucks, and the later cut-throat competition of the railway, led to a rapid reduction in freight rates between 1922 and 1940.[61] During the Second World War the transportation network of the country was taken over by the Allied Occupation Forces,[62] and freight rates for private importers rose by as much as 1000 per cent.[63] After the war freight rates fell to the level of the mid 1930s, and from 1950 road carriage rates have been declining with rail charges remaining stable at a rather higher level.[64] Consequently there has been a switch to a more intensive use of road transport, which has been further encouraged by the general improvements in the state of the nation's highways and the expansion of the road network.[65] The railway is now mainly used for freighting very heavy goods, government imports and customs-bonded items.[66] For this reason it has been assumed here that all imports exempt from customs duties travel by rail, and non-exempt items travel by road. This is a less arbitrary distinction than the 50-50 split assumed by the Central Bank of Iran.[67]

The rates used in this study are as follows (in rials per ton)

Period	Non-exempt items	Exempt items
1900-1921	3.3	3.3
1922-1928	5.0	5.0
1929-1932	1.7	1.7
1933-1936	1.2	1.2

Period	Non-exempt items	Exempt items
1937-1940	1.0	1.0
1941-1945	10.0	1.0
1946-1949	1.2	1.2
1950-1965	1.0	2.0

These rates are averages for the periods concerned and are based on a number of independent studies of freight rates made during the 65 years.[68]

Distance Travelled

The average distance travelled by capital goods from customs warehouse to final destination is assumed in this study to be 1000 kilometres. The use of this figure is based on two features of the Iranian economy; firstly, that most capital goods enter the country through the ports of Khorramshahr or Abadan; secondly, that most capital goods are destined for Tehran. And the distance between Tehran and Khorramshahr-Abadan is approximately 1000 km.[69]

In 1956, the only year for which information is available, 70 per cent of potential capital goods (by value) entered Iran through Khorramshahr, and another 10 per cent through Bandar Shapour (which is approximately the same distance from Tehran).[70] Of the remainder, half were reported to have been cleared from Ahwaz or Tehran customs, and it is certain that at least 90 per cent of these items would have been put in bond at Khorramshahr or Bandar Shapour.[71] Thus for 1956 it can be stated that around

nine-tenths of all potential capital goods were originally landed at one of the ports at the head of the Persian Gulf, 1000 km. from Tehran.

Moreover, data for total imports for the years 1947-1957 indicate that, on average, 72 per cent of imports entered Iran through the Gulf-head ports.[72] And one would expect the percentage to be higher for capital goods because of the better facilities for dealing with bulky and heavy imports at these ports.[73]

It has been estimated that 90 per cent of Iran's imports are destined for Tehran,[74] either for use in the city or for redistribution to other areas, and it is certain that this percentage (quoted for 1965) was formerly even higher.[75] The reasons for this are fourfold:

a. There has always been a tendency for industry to be centralized in or near Tehran.[76]

b. There has always been a preference for giving import licences to Tehran merchants.[77]

c. The road and rail network of the country has been built in such a way that, until recent years, it has usually been easier and quicker to transport goods via Tehran.[78]

d. Truck owners have insisted on routes via Tehran because of the greater possibility of full return loads and inter-route business.[79]

Distribution Expenses

By far the largest addition to c.i.f. values, on average, is a percentage for distribution expenses, which may be described as all expenses, excluding basic freight charges, made between clearance of an item from customs and its arrival at its final place of destination (ready, if necessary, for installation). The percentages used for each tariff item during each different period of tariff classification are given in Appendix C.

Included in distribution expenses are

a. Port and customs taxes other than customs duties and Commercial Tax. These have been discussed above and may amount to about 5 per cent of c.i.f. value. In most cases they apply with equal force to goods which are exempt from the major duties and taxes.

b. Loading and unloading charges at port of entry and final destination. These charges are usually related to weight rather than value, but a rough estimate has put them at about 3 per cent of c.i.f. values.[80]

c. Inland insurance premiums. According to insurance and forwarding agents in Iran, the inland insurance is usually included in the c.i.f. price of any item.[81] This is because insurance is easier and cheaper from

factory gate to factory gate than on a split basis. However, before the mid 1930s inland insurance was usually made separately and amounted to about 3 per cent of the F.O.B. value of the goods (which would equal about 2 per cent of c.i.f. values).[82]

d. Stamp duties on bank, trade and exchange documents. These duties have changed as regulations have changed, but it has been estimated that in 1965 they amounted to about 1 per cent of c.i.f. values.[83]

e. Commission taken by agents or importers. This amount will vary with the methods of purchase of capital goods.[84] It is probably true that government imports, or those imports by the final user, will not be subject to extra commission charges. Yet this is not certain; nor is it certain what proportion of capital goods are imported by final users into Iran. Written into the assumed distribution percentages is a subjective estimate of how capital goods of various types are imported, and the types of commission likely to be charged.[85]

f. Bribes, tips and sundry expenses. It is inevitable in Iran that any process of ordering, financing, clearing, collecting, transporting and delivering any item will involve the purchaser in a number of such expenses. The extent of these expenses can

only be guessed at, and they are assumed here to be about 1 per cent of c.i.f. values.[86]

It can be seen, therefore, that 10 per cent must be added to c.i.f. values for distribution expenses even if no commission or distributor's profit is involved. Consequently, for every item exempt from duty in this study 10 per cent is added. For non-exempt items, a further addition is made to cover distributor's margins, this being based, as far as possible, on discussions with people involved in the import trade. In almost all cases, the final mark-up is considerably higher than that used by the Central Bank of Iran,[87] which has been criticised as too low.[88]

Installation Expenses

A distinction can readily be made between those capital goods which require extra expense for installation and those which do not. Examples of the latter type are all kinds of vehicles and small durable goods. Of those in the former category an estimate has been made of the percentage addition to c.i.f. values required to meet installation expenses, and these are listed fully in Appendix C. A general assumption is that the 'heavier' the item, the greater will be the installation expense, although a special case is made for water pumps which are estimated to have a high cost of installation relative to their

c.i.f. values due to the need for excavation and ditching work.[89]

Installation costs include labour charges, electric and water connections, machine foundations and sundry other expenses.[90] For the installation of machinery in three large types of textile plant, costs have been estimated at between 20-28 per cent of c.i.f. values.[91] For 14 small industrial projects, installation charges are estimated at between 5 per cent and 11 per cent (average 8 per cent for all 14).[92] And for machinery in two medium-sized food processing plants 10 and 13 per cent are the estimates.[93] This range and pattern of percentages has been followed here.

Exports of Capital Goods

The estimates of capital formation in imported capital goods must relate to net imports. It is therefore necessary to examine the volume and value of exports of 'potential' capital goods.[94] This is not done in any other G.D.F.C.F. estimates for Iran.[95] The figures in Table 6-4, however, indicate that such exports have been insignificant during the period 1900-1965.

Results

Capital formation in imported capital goods 1900-1965 is given in Table 6-1 in current rials and in Table 6-3 in constant (1965) rials. The weight of imported capital

goods 1938-1965 (the only period for which full figures are comparable) is shown in Table 6-2. Finally, Table 6-5 shows the percentage composition of market values of imported capital goods. All these results are discussed, together with the other components of G.D.F.C.F., in Chapter 5.

Table 6-1: G,D.F.C.F. in Imported Capital Goods, 1900-1965.

(in millions of rials at current domestic prices)

Year	Total	% change per year	Year	Total	% change per year
1900	6.0*	-	1933	350.6	64
1901	13.2*	120	1934	348.9	0
1902	12.1	- 8	1935	462.0	32
1903	20.1	65	1936	533.5	15
1904	19.2	- 4	1937	688.7	29
1905	26.6	38	1938	836.4	21
1906	22.2	- 17	1939	462.3	- 45
1907	16.4	- 26	1940	318.6	- 31
1908	16.5	1	1941	466.6	46
1909	41.8	153	1942	1079.6	131
1910	33.7	- 19	1943	232.6	- 78
1911	41.8	24	1944	468.1	100
1912	32.9	- 21	1945	960.3	104
1913	54.7	66	1946	1618.5	69
1914	60.6	11	1947	1598.8	- 1
1915	94.9	56	1948	1562.2	- 2
1916	62.5	- 34	1949	2665.7	70
1917	75.3	20	1950	2603.9	- 2
1918	54.7	- 27	1951	2379.0	- 9
1919	122.5	124	1952	2966.1	25
1920	83.3	- 32	1953	4526.8	52
1921	100.7	21	1954	8127.5	79
1922	104.9	4	1955	11089.5	36
1923	82.3	- 22	1956	11724.4	6
1924	121.7	48	1957	13531.6	15
1925	102.7	- 15	1958	22725.6	68
1926	188.2	84	1959	28689.3	26
1927	270.6	44	1960	29061.8	1
1928	210.9	- 22	1961	24341.9	- 16
1929	389.9	85	1962	20651.5	- 15
1930	428.2	10	1963	17581.0	- 15
1931	154.1	- 64	1964	24921.1	41
1932	213.5	38	1965	34921.1	40

* Estimated from general level of imports and, for 1901, APOC data.

Table 6-2: Weight of Imported Capital Goods, 1938-1965

(in thousands of metric tons)

Year	Weight	Year	Weight
1938	132.6	1952	19.1
1939	78.5	1953	30.4
1940	46.8	1954	59.3
1941	53.6	1955	170.2
1942	64.3	1956	148.7
1943	13.6	1957	114.9
1944	14.7	1958	200.8
1945	68.2	1959	226.3
1946	98.0	1960	233.1
1947	55.3	1961	178.6
1948	38.1	1962	119.0
1949	57.8	1963	97.0
1950	57.5	1964	129.4
1951	62.4	1965	197.8

Table 6-3: G.D.F.C.F. in Imported Capital Goods, 1900-1965.

(in millions of 1965 rials)

Year	Total	Year	Total
1900	100.0	1934	4714.9
1901	220.0	1935	5250.0
1902	201.7	1936	5736.6
1903	335.0	1937	6149.1
1904	320.0	1938	7273.0
1905	443.3	1939	3502.3
1906	370.0	1940	2182.2
1907	273.3	1941	2254.1
1908	275.0	1942	2699.0
1909	696.7	1943	387.7
1910	561.7	1944	756.2
1911	696.7	1945	1613.9
1912	548.3	1946	2921.4
1913	911.7	1947	2574.5
1914	1063.2	1948	2335.1
1915	1530.6	1949	4588.1
1916	947.0	1950	4742.9
1917	1075.7	1951	4059.7
1918	781.4	1952	4760.9
1919	1775.4	1953	5686.9
1920	1388.3	1954	9214.8
1921	1766.7	1955	13046.5
1922	1613.8	1956	12799.5
1923	1371.7	1957	15051.8
1924	1901.6	1958	25591.9
1925	1604.7	1959	31700.9
1926	2895.4	1960	31520.4
1927	4510.0	1961	26344.0
1928	3700.0	1962	22040.0
1929	6498.3	1963	18703.2
1930	6906.4	1964	25147.4
1931	2446.0	1965	34921.1
1932	3284.6		
1933	5312.1		

Source: Table 6-1 and Appendix G.

Table 6-4: Weight and Value of Exports of Potential Capital Goods, 1900-1965. (in current rials)

(in millions of rials and metric tons)

Year	Weight	Value	Year	Weight	Value
1900	n.a.	n.a.	1933	166.5	2.4
1901	n.a.	n.a.	1934	113.1	1.6
1902	237.0	0.7	1935	90.0	1.3
1903	22.8	0.7	1936	36.0	0.4
1904	55.2	0.6	1937	97.8	0.3
1905	62.4	0.8	1938	154.3	0.4
1906	43.5	0.8	1939	35.8	0.3
1907	50.1	0.7	1940	18.1	0.2
1908	31.5	0.5	1941	109.5	4.1
1909	69.6	0.8	1942	107.1	0.8
1910	56.4	0.8	1943	123.6	0.4
1911	90.0	1.0	1944	144.0	0.9
1912	84.3	0.7	1945	325.0	2.0
1913	68.7	0.6	1946	175.6	1.8
1914	82.2	0.5	1947	90.3	1.0
1915	42.3	0.3	1948	82.5	1.0
1916	13.5	0.1	1949	139.2	3.3
1917	10.8	0.1	1950	86.7	8.9
1918	16.5	0.1	1951	269.1	19.2
1919	186.3	0.6	1952	506.0	23.0
1920	2.1	0.2	1953	221.2	6.8
1921	15.6	0.3	1954	74.0	2.6
1922	15.6	0.3	1955	98.6	4.5
1923	3.9	0.4	1956	85.1	3.1
1924	6.6	0.4	1957	108.9	1.3
1925	27.6	0.6	1958	78.2	2.2
1926	351.3	1.2	1959	48.7	1.9
1927	387.3	1.4	1960	304.2	7.2
1928	451.8	2.7	1961	229.1	9.8
1929	279.9	1.8	1962	886.2	34.3
1930	250.2	2.1	1963	1175.8	30.5
1931	193.5	2.3	1964	1065.4	70.8
1932	150.9	1.7	1965	620.6	29.1

Notes: a. The figures for weight of exports 1900-1938 understate the true figures because not all export items were weighed.

b. The figures for 1900-1935, originally given in mans (batmans) have been converted to kilograms by a multiplier of 3.

Table 6-5: Composition of Market Values of Imported Capital Goods, 1900-1965, in Percentages

Year	C.i.f.	Duties	Freight	Distrib.	Install.	Total
1900	n.a.	1	n.a.	n.a.	n.a.	100
1901	n.a.	1	n.a.	n.a.	n.a.	100
1902	42	1	35	22	-	100
1903	37	2	42	18	-	100
1904	36	2	42	18	-	100
1905	33	2	48	16	-	100
1906	36	2	42	18	-	100
1907	36	2	42	18	-	100
1908	35	2	45	17	-	100
1909	20	3	66	10	-	100
1910	26	3	58	13	-	100
1911	29	3	54	14	-	100
1912	33	2	47	17	-	100
1913	29	2	53	14	-	100
1914	29	2	53	15	-	100
1915	35	2	44	18	-	100
1916	35	2	45	18	-	100
1917	31	2	51	15	-	100
1918	36	2	43	18	-	100
1919	35	2	45	17	-	100
1920	31	1	48	15	3	100
1921	30	2	48	15	3	100
1922	32	1	46	16	3	100
1923	32	2	46	16	3	100
1924	31	2	47	15	4	100
1925	32	3	46	16	4	100
1926	34	3	43	17	3	100
1927	33	2	44	16	3	100
1928	45	1	28	20	6	100
1929	41	1	32	18	8	100
1930	49	1	22	17	11	100
1931	52	1	15	28	7	100
1932	52	1	16	25	7	100
1933	46	1	23	18	12	100
1934	55	1	16	18	10	100
1935	54	1	16	17	11	100
1936	55	3	16	17	8	100
1937	57	3	16	16	8	100
1938	59	2	16	15	8	100
1939	59	4	17	13	7	100

Continued.....

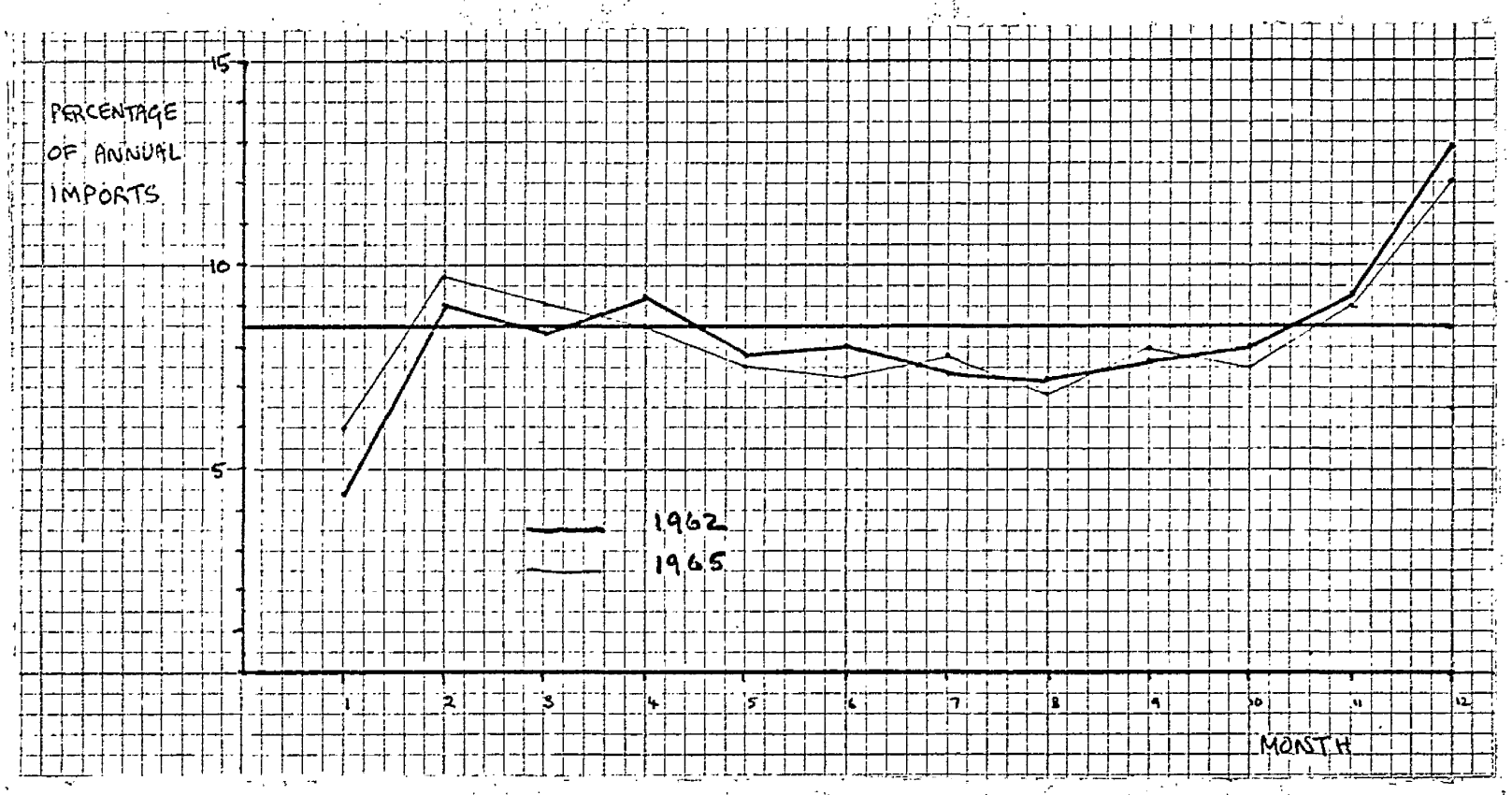
Table 6-5 Continued

Year	C.i.f.	Duties	Freight	Distrib.	Install.	Total
1940	57	4	15	18	7	100
1941	41	7	32	15	5	100
1942	76	0	8	9	6	100
1943	72	2	8	11	7	100
1944	67	4	9	17	4	100
1945	64	3	16	14	3	100
1946	64	4	7	16	8	100
1947	67	4	4	19	6	100
1948	69	4	3	19	6	100
1949	66	4	3	20	6	100
1950	64	7	3	19	8	100
1951	63	8	3	18	8	100
1952	67	5	1	20	7	100
1953	66	6	1	21	6	100
1954	67	7	1	19	5	100
1955	66	6	3	18	7	100
1956	67	7	2	16	7	100
1957	67	7	1	16	8	100
1958	67	6	1	16	9	100
1959	66	6	1	17	10	100
1960	64	8	1	17	10	100
1961	66	7	1	15	11	100
1962	65	7	1	15	13	100
1963	65	8	1	16	11	100
1964	64	8	1	16	11	100
1965	66	7	1	14	11	100

Source: Worksheets of J. Bharier, used for calculating figures in Table 6-1.

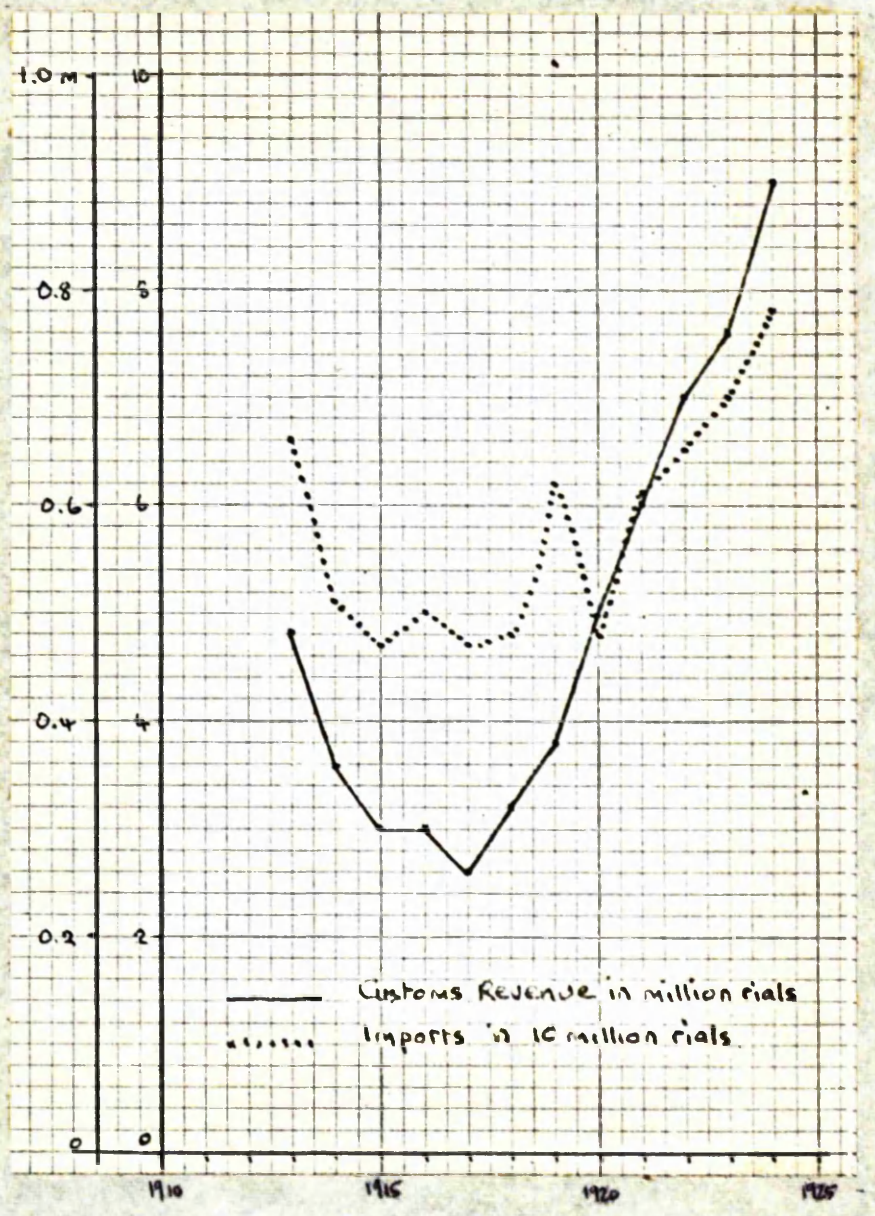
Notes: Sum of components may not add exactly to 100 because of rounding.
Figures for 1900-1927 are based on the imports of non-exempt goods only.

Graph 6-1: Monthly Pattern of Imports into Iran, 1962 and 1965



Source: Iranian Trade Statistics, Monthly Bulletins, 1962 and 1965.

Graph 6-2: Comparison of Customs Revenue and Imports, 1913-1925.



Source: Millspaugh, A.C., 'The Financial and Economic Situation of Persia, 1926', New York, 1926.

Notes

1. Bank Markazi Iran, 'Provisional Estimates of National Income of Iran, 1959-1963', Tehran 1966, pp.21-2. This series has been extended to 1965 by figures obtained privately from Dr. Bahman Homayoon of the bank's Economic Research Bureau (letter of December 26, 1967).

2. The general title 'Foreign Trade Statistics of Iran' covers the following publications:

1900-1917	Empire de Perse, Ministere des Douanes et des Postes, 'Statistique Commerciale: Tableau General du Commerce avec les Pays Etrangers'.
1918-1932	Empire de Perse, Administration des Douanes, 'Statistique Commerciale: Tableau General du Commerce avec les Pays Etrangers'.
1933	Iran, Administration des Douanes, title as for 1932.
1934-1935	Iran, Ministere des Finances, Administration General des Douanes, 'Tableau General des Importations et des Exportations de l'Iran avec les Pays Etrangers'.
1936-1938	Iran, Ministere des Finances, Administration General des Douanes, 'Statistique du Commerce de l'Iran avec les Pays Etrangers'.
1939-1955	Iran, Ministere des Finances, Administration General des Douanes, 'Statistique Annuelle du Commerce Exterieur de l'Iran'.
1956-1957	Iran, Ministry of Customs and Monopolies, Customs Administration, Department of Statistics, 'Foreign Trade Statistics'.
1958-1959	Iran, General Administration of Customs, Department of Statistics and Economic Affairs, 'Foreign Trade Statistics of Iran'.
1960-1961	Iran, Ministry of Commerce, Department General of Statistics and Researches, 'Foreign Trade Statistics of Iran'.
1962-1963	Iran, Ministry of Economy, Department General of Statistics and Researches, 'Foreign Trade Statistics of Iran'.
1964-1965	Iran, Ministry of Economy, General Department of Trade Statistics, 'Foreign Trade Statistics of Iran'.

I am grateful for the assistance of Dr. G.R. Farzanehpour in obtaining some of the less accessible volumes, and also to Roger Cooper, B.A., for obtaining figures from the volume for 1945 which were unavailable to me.

3. See Table 6-2.

4. Temple, B., 'Report on Trade and Transport Conditions in Persia, to January 1922', Department of Overseas Trade, London, 1922, p.4.

5. Agah, M., 'Some Aspects of the Economic Development of Modern Iran', D.Phil. thesis (unpublished), Oxford, 1958, p.74. Also the relevant years of the foreign trade statistics.

6. The total annual surcharge paid on each tariff item imported and exported can be found in the foreign trade statistics for the relevant years.

7. It would also be necessary to make an adjustment were it required to construct an index of imported goods in foreign currency.

8. Exempt items were defined in 1938 as 'Les machines industrielles importees en franchise de droits en vertu de la loi du (Fevrier 1925) et les machines agricoles et autres marchandises qui, d'apres le Tarif douanier, sont libres de droits a l'entree...'. Foreign Trade Statistics 1938, p.279.

9. For some years in the study this process was made still more complicated by the fact that the tariff numbers of the exempted items were omitted, and these numbers had to be allocated before totalling was possible. See Foreign Trade Statistics 1951-1955.

10. For example, Lingeman, E.R., 'Economic Conditions in Persia', Department of Overseas Trade, London, 1930, p.22, who states 'The fluctuations in the imports of machinery, tools, nails, rivets, etc., depend very largely on the Anglo-Persian Oil Company's programme of extension.' Yet he is referring to statistics which do not include A.P.O.C. imports.

11. Annual balance sheets of the Anglo-Persian Oil Company (later Anglo-Iranian Oil Company, and still later British Petroleum) 1910 continuing. File no.102498 at Companies House, The Board of Trade, London.

12. Anglo-Persian Oil Company, Balance Sheet, 1910.

13. United Nations-E.C.A.F.E. Port Survey Team, 'The Ports of Iran', Tehran, 1966, restricted, p.20.

14. Goodfellow, B.R., 'United Nations Industrial Survey Mission in Iran - Interim Report to the Government of Iran', Tehran, 1964, restricted, p.38.

15. U.N.-E.C.A.F.E. Port Survey Team, op. cit., p.20.

16. Williams, Richard M., 'United States of America Operations Mission to Iran Port Survey 1955', Tehran, 1955, p.53.

17. Goodfellow, B.R., op. cit., p.38; Peace, G.L., 'Report on the Development of Small-Scale Industries in Iran', Tehran, 1962, restricted, p.35.

18. See above, Chapter 2.

19. No information exists on this time lag.

20. Adib-Soltani, Sharif, 'Domestic Capital Formation in Private Manufacturing Industry in Iran for the period 1948-1957', Plan Organization, Tehran, 1959, unpublished, p.12-14. Adib-Soltani assumes that all capital goods require the same six-months lag, which is calculated by taking two-year averages and designating this average as the value for the second year.

21. Although monthly statistics of foreign trade have been published occasionally throughout the 65-year series, it has not been possible to obtain a full, detailed set for any one year. The production of monthly statistics has indeed been severely criticised by Somermeyer, W.H., 'First Preliminary Report on National Income and Related Statistics in Iran', Tehran, 1962, restricted, p.10.

22. The new year spending spree, which results, it seems, mainly from superstition, is illustrated clearly in the monthly statistics of note issue and note cover. See, for example, Bank Markazi Iran, 'Bulletin', January-February 1968, p.710.

23. United Nations, 'Concepts and Definitions of Capital Formation', Studies in Methods, Series F, No.3, United Nations, 1953, p.13.

24. Feinstein, C.H., 'Domestic Capital Formation in the United Kingdom 1920-1938', Cambridge, 1965, p.66.

25. See Chapter 2, for discussion of concepts and definitions.

26. See Foreign Trade Statistics 1960, p.125 for the single article Act authorizing the Iranian government to adhere to the Brussels Customs Nomenclature. This Act has not been enforced. Indeed it was passed at a time when the United Nations had already recommended a new Standard International Trade Classification.

27. Bank Markazi Iran, 'Provisional Estimates....', op. cit., p.99, and data on exclusions percentages given privately by M. Tajdar and P. Vafai of the bank's National Income Bureau.

28. Ibid., p.99.

29. Ibid., p.99.

30. Ibid., p.99.

31. The term Corps Diplomatique covers such agencies as industrial missions and items imported under bilateral agreements. See, for example, full list of exempted agencies in Foreign Trade Statistics 1965, pp.i-iv (Preface of Appendix Issue).

32. Iran, Ministry of Economy, 'Complete Customs Laws and Regulations', Tehran, 1965. (Persian).

33. Iran, Ministry of Economy, General Department of Trade Statistics, 'General Import-Export Regulations for the Iranian Year 1344 (1965)', Tehran, 1965 and previous years under similar titles.

34. Bureau International des Tarifs Douaniers, 'Bulletin International des Douanes, Number 138, Iran', Brussels,

1st Edition	1900	4th Edition	1928
2nd Edition	1903	5th Edition	1939
3rd Edition	1920	6th Edition	1946

(These six editions were obtained through the co-operation of the Director of the Bureau, R. Marchand)

7th Edition	1954	8th Edition	1960

35. Where major changes have occurred, these have been listed in supplements to the 'Bulletin International....' as follows:

2nd Edition - Supplements in 1907, 1911 and 1919.
3rd Edition - Supplements in 1924, 1925, 1925 and 1925.
7th Edition - Supplement in 1955.

36. This was certainly the case in the mid 1920s and 1930s.

37. From Iran, Ministry of Economy, General Department of Trade Statistics, 'Revenue of the Iranian Customs 1956-1965', Tehran, 1966 (Persian), Part Two, '1965 Revenue by Tariff Numbers'.

38. No details for years before 1965 are available.

39. Elwell-Sutton, L.P., 'Modern Iran', London, 1941, p.60.

40. Hadow, R.H., 'Report on the Trade and Industry of Persia', Department of Overseas Trade, London, 1925, p.26.

41. Information from Ali Jehangir, recently retired Under-secretary of Customs, in conversation February 11, 1967.

42. Millspaugh, A.C., 'The Financial and Economic Situation of Persia, 1926', New York, 1926, p.25.

43. From Ali Jehangir, see Note 41.

44. A Law approved on January 27, 1925 gave industrial machines, agricultural implements, trucks and buses the right of duty-free entry into Iran. Since that time similar laws have been approved, including, on November 28, 1955, the Law concerning The Attraction and Protection of Foreign Investments in Iran. See Bank Markazi Iran, Centre for the Attraction and Protection of Foreign Investments, 'Law, Regulations and Decree', 1962.

45. For recent years these procedures are listed in Bank Markazi Iran, Centre for the Attraction and Protection of Foreign Investments, 'Tax and Customs Regulations and Concessions to Investors', Tehran, undated (1962?). But see comments on the goods awaiting exemption certificates in U.N.-E.C.A.F.E. Port Survey Team, op. cit., p.20.

46. Gray, F.A.G., 'Report on Economic and Commercial Conditions in Iran', Department of Overseas Trade, London, 1938, p.1.

47. See text above.

48. Mason, F.C., 'Economic and Commercial Conditions in Iran', Department of Overseas Trade, London 1957, p.14.

49. Grayson, Helen D., 'Foreign Trade Regulations of Iran', U.S. Department of Commerce, Overseas Business Report OBR 65-82, Washington, 1965, gives a good survey of these duties.

50. Calculation made by applying the known rates for 1965 to import volume and value data.

51. Bank Markazi Iran, 'Investors' Guide to Iran', Tehran, 1966, p.57.

52. Information from M. Tajdar and P. Vafai of the Bank Markazi Iran's National Income Bureau.

53. Information from the Commercial Counsellor of an Embassy in Tehran, in conversation February 27, 1967. (My informant wishes to remain anonymous).

54. Information from the Managing Directors of two major trading companies in Tehran. In conversation February 6, 1967 and March 6, 1967. Both wish to remain anonymous.

55. Information from D. Fleishman, Manager of Kuhne and Nagel, Forwarding Agents, Tehran, in conversation January 4, 1967.

56. The small mark-up of c.i.f. values for these duties and charges is, in fact, submerged by the much higher mark-ups for distribution expenses. See below.

57. See Department of Overseas Trade Reports by Temple, Hadow and Lingeman, ops. cit.

58. Lingeman, E.R., 'Economic Conditions in Persia', Department of Overseas Trade, London, 1930, p.6.

59. Plan Organization, Third Plan Frame, 'Transport and Communication', Tehran, 1961, p.34.

60. Williamson, J.W., 'In a Persian Oilfield', London, 1930, p.25.

61. Agah, M., op. cit., p.20.

62. Vail Motter, T.H., 'The Persian Corridor and Aid to Russia', Washington, 1952, p.11.

63. Information from Rooh'ol Amin, Director of the Transport Syndicate of Iran, in conversation February 13, 1967.

64. Rooh'ol Amin, in conversation February 13, 1967; Rail rates from Ministry of Roads, Iranian State Railways Agency, 'Report', 1st Edition 1938, 2nd Edition 1945, 3rd Edition 1949, 4th Edition 1954 and 5th Edition 'Transport of Goods and Passengers' 1964.

65. Plan Organization, op. cit., pp.20-33; Also Plan Organization, 'Iran's New Axis Road', Tehran, 1963, pp.1-12.

66. Information from Forwarding Agents and merchants in Tehran. See also U.N.-E.C.A.F.E. Port Survey Team, op. cit., p.43.

67. Bank Markazi Iran, 'Provisional Estimates....', op. cit., p.14.

68. Sventitski, A.S., 'Transport Routes in Persia', in Journal of the Royal Central Asian Society 1928, pp.211-2; Simmonds, S., 'Economic Conditions in Iran (Persia)', Department of Overseas Trade, London, 1935, Appendix 8; Temple B., op. cit., pp.18-20; Lingeman, E.R., op. cit., p.48; Hadow, R.H., op. cit., p.4; Rooh'ol Amin, in conversation February 13, 1967.

69. The distance has been variously estimated at 1106 km. (Ministry of Roads, 'Iran Highway Map', 1966); 1000 km. (Homayoon, B., 'National Income of Iran 1959-1962', Tehran, 1964, p.15); Julian Bharier, by car, 1962, 970 km.

70. Calculated from detailed data on imports by port of entry in Foreign Trade Statistics 1956.

71. U.N.-E.C.A.F.E. Port Survey Team, op. cit., pp.19-20.

72. Calculated from figures for total imports by port of entry in Foreign Trade Statistics 1947-57. The figure of 72 per cent is used by Plan Organization, 'Transport and Communication', op. cit., p.49, for projection purposes.

73. U.N.-E.C.A.F.E. Port Survey Team, op. cit., p.3.

74. Ibid., p.23.

75. Information from Rooh'ol Amin, in conversation, February 13, 1967.

76. Nearly 40 per cent of all industrial establishments are situated in or around Tehran. Iran, Ministry of Interior, 'Summary Results of the Industrial Census of Iran', Tehran, 1966, p.66, (Persian).

77. Khosropour, A.A., 'Le Controle des Changes en Iran Depuis 1930 Jusqu'a la Fin 1955', Paris University Thesis, 1956, p.28.

78. See, for example, route map in Simmonds, S., op. cit., p.50. Recent improvements will cut distances considerably. See Iran, Ministry of Roads, 'Iran Highway Map', 1966.

79. Information from Rooh'ol Amin, in conversation, February 6, 1967.

80. Bank Markazi Iran, 'Investors' Guide to Iran', op. cit., p.57.

81. Letter of March 2, 1966 from H. Nahai, agent in Iran for the Yorkshire Insurance Company, the sole foreign insurance company operating in Iran. Three forwarding agents, D. Fleishman of Kuhne and Nagel, R. Grubler of Hirsch Iran Company, and M. Frendian of Schenker point out that the insurance is often paid in Iran even though it is included in the c.i.f. price of an import, due to Iranian insurance regulations.

82. Hadow, R.H., 'Report on the Trade and Industry of Persia', Department of Overseas Trade, London, 1925, p.6.

83. Bank Markazi Iran, 'Investors'....(, op. cit., p.57. Mr. Saberi, of the Bank Markazi Iran's Foreign Exchange Department, lists these items as
    a. 0.001 per cent c.i.f. for export promotion.
    b. 0.5 per cent health tax.
    c. 0.5 per cent Letter of Credit Charge (for 3 months or less).
    d. 0.002 per cent for Bill of Collect charge (for 2 months).
    e. 4.0 per cent Registration Fee, returnable when goods delivered.

    Of these five, the first two have already been included in the various minor customs and port charges. (Saberi, in conversation, February 25, 1967).

84. i.e. whether one or more agents are used, whether imports are purchased directly by the final user, whether goods are displayed or kept in store before sale to final user, etc.

85. Based on interviews with two leading merchants in Tehran and the Commercial Counsellor of an embassy; also on Plan Organization, 'Regulations Granting Credit for Agricultural Machinery', Tehran, 1956, pp.1-3.

86. This estimate is highly subjective and cannot be supported by objective evidence.

87. Bank Markazi Iran, 'Provisional Estimates....', op. cit., p.14.

88. Criticism by C. Myslicki, U.S.-A.I.D. Statistical Adviser to Bank Markazi Iran, in conversation, January 9, 1967.

89. Based on data in Parsons-Johnston-Brush International, 'Ground-Water Survey for the Seven Year Plan', Los Angeles, 1951.

90. They do not include civil engineering expenses which are covered in Chapter 9.

91. Japan Consulting Institute, 'Final Report on Industrialization of Soft Wool in Iran', Tehran, 1965, pp.231-249.

92. Palit, Sudhansu S., 'Final Report to the Government of Iran', Tehran, 1965, restricted, pp.10-24.

93. Perry, John L., 'Investment Opportunities in Vegetable Dehydration in Iran', Tehran, 1964, p.14; Perry, John L., 'Report to Takistan Raisin Company on Grape Juice Processing Equipment', Tehran, 1965, unpublished, p.18.

94. Ramamurti, B., and Pedersen, H.T., 'Statistical Methods of Estimating Capital Formation Expenditure in E.C.A.F.E. Countries', in 'Asian Studies in Income and Wealth', Asia Publishing House, London, 1965, p.109.

95. Information from M. Tajdar, of Central Bank of Iran, in conversation at various meetings, 1966-7.

CHAPTER SEVEN

DOMESTIC PRODUCTION OF CAPITAL GOODS

Domestically produced capital goods* can be divided into two categories, 'traditional' capital goods and 'modern' capital goods. The former category, which has, in general, been omitted from estimates of G.D.F.C.F. in Iran[1] and other countries,[2] has been of greater importance than the latter in the period under study.

'Modern' capital goods are defined here as capital goods produced or assembled in establishments with more than 10 employees.[3] This definition hinges on the fact that data from various industrial surveys in Iran have been confined to the output of such establishments.[4] The selection of capital goods from the total output of 'modern' industry follows the same pattern as the selection process for imported capital goods, in respect both to the list of potential capital goods and to the exclusion percentages applied to account for final use by non-producers.[5]

For the years 1954-1965 actual or index data are available on the production and/or value of 'modern' capital goods.[6] Ex-factory values have been marked up by 20 per cent to cover freight, distribution and installation expenses. Information on the annual value of output by the domestic assembly industry has been obtained directly from the assembly plants,[7] and this value has been marked down by 50 per cent to avoid double-counting of the

*Excluding construction of all types.

imported component parts included in the totals of Chapter 6.

For one year, 1962, information is available on the value of capital goods produced within 'modern' establishments for use by the establishments themselves.[8] It has been noted that such items are usually copies of similar imported items,[9] but are sometimes inventions of the employees.[10] The estimated value of these goods for 1962 has been added to the total value of other 'modern' capital goods in the same year; no mark-up of values being required as they are used where they are produced. For other years, an adjustment is made to the figures for G.D.F.C.F. in domestically produced 'modern' capital goods to account for these 'internal' capital goods. The adjustment is made on the basis of the 1962 percentage relationship between 'internal' and other 'modern' capital goods.

The final annual totals for G.D.F.C.F. in domestically produced 'modern' capital goods are given in Table 7-1.[11]

For years before 1954 it has been assumed that the production of 'modern' capital goods was negligible.[12] To support this assumption, a close examination was made of a comprehensive and detailed list of the structure and output of industrial establishments for the year 1947.[13] None of the 293 establishments was found to produce any type of potential capital good. There is no evidence

that this situation changed radically during the period 1948-1953, or that 'internal' production of capital goods was widespread.[14]

'Traditional' capital goods are defined here as capital goods produced in establishments with less than 10 employees, or, in rather more general terms, as capital goods produced on a unit basis by methods which have basically remained unchanged throughout the 65-year period of this study.[15] They include all types of indigenous agricultural implements, hand tools, transport equipment and equipment used by the service trades.

A descriptive list of Iranian implements and tools, together with the variations on each item, has been produced by Wulff in his study of Iranian crafts,[16] while other students have described the more common tools and their methods of use.[17] Apart from these, however, there is considerable domestic production of ad hoc equipment, often from spare-parts, worn-out machinery and other odds and ends.[18] A classic example of such equipment was observed in a tyre-repairer's workshop in Khorramdarreh, where the entire stock of the owner's capital goods had been fashioned out of the remains of an abandoned motor-car.[19] Such capital goods, in small establishments, are equivalent to the 'internally-produced modern' capital goods of the large establishments.

'Traditional' capital goods are used in almost every

type of small-scale agricultural, industrial and service occupation in Iran,[20] and since 'modern' industry is still not widespread,[21] there are good a priori reasons for believing that G.D.F.C.F. in these items is a significant proportion of total G.D.F.C.F. in the country.

But data on the prices, longevity and total number of such 'traditional' capital goods are almost completely lacking.[22] Indeed, this is the reason that most G.D.F.C.F. estimates exclude them. The only relevant information available for Iran is a sample survey on rural expenditure by households, and this survey is utilised here to enable rough annual estimates of G.D.F.C.F. in 'traditional' capital goods to be made.

The survey (unpublished and restricted) was made in 1963 by the Iranian Ministry of Interior with the assistance of a United Nations statistical expert, and covered a sample of 823 households from 144 villages.[23] The results indicate that, on average, 6.4 per cent of per capita expenditure in the rural areas is made on various types of durable goods; 4.2 per cent on furniture, kitchen and washing equipment and 2.2 per cent on miscellaneous equipment and transport equipment.[24] If it is assumed that this 2.2 per cent represents expenditure on capital goods, and that one half of the transport equipment is imported, it can be stated that 1.5 per cent of per capita expendi-

ture is made on 'traditional' capital goods.

If, in addition, a further assumption is made that the 1.5 per cent applies to expenditure by all Iranians (and not just by those in rural areas) on 'traditional' capital goods,[25] it can be estimated that G.D.F.C.F. in 'traditional' capital goods amounted to 5.5 billion rials in 1963. This is four times greater than G.D.F.C.F. in 'modern' indigenous capital goods for the same year,[26] and amounts to 52 per cent of G.D.F.C.F. in imported capital goods in 1963.[27]

The fact that this result is based on a series of drastic assumptions and a survey which may, itself, be subject to considerable error,[28] implies that the total for 1963 can be regarded as little more than an 'order of magnitude'. Nevertheless, the figure is large enough to affect considerably estimates of total G.D.F.C.F., and its omission from such estimates is a serious error.

For years in which estimates of national and per capita expenditure are available (1959-1965),[29] 1.5 per cent of Gross National Expenditure is assumed to be spent on purchases of 'traditional' capital goods. From 1954-1959 it has been assumed that Gross National Expenditure grew by an annual six per cent,[30] and 1.5 per cent of each year's estimate is again used. And for years before 1954 it has been assumed that the amount of per capita expend-

iture on 'traditional' capital goods was the same, in real terms, as in 1954. Thus the total expenditure on 'traditional' capital goods for 1954 is deflated by an index of population and the general wholesale price index to obtain annual estimates for the period 1900-1953. Again it is necessary to stress the rough nature of the methods employed and the results obtained.

The annual totals for G.D.F.C.F. in 'traditional', indigenous capital goods are given in Table 7-2, and the annual totals for G.D.F.C.F. in domestically produced capital goods ('traditional' and 'modern') are presented in Table 7-3.

Table 7-1: Expenditure on Domestically-Produced Capital Goods - 'Modern' - 1954-1965. Current Prices.

(in millions of rials)

Year	Total
1954	11.2
1955	11.2
1956	22.7
1957	22.7
1958	226.3
1959	1131.0
1960	1578.0
1961	1663.2
1962	1700.4
1963	1779.6
1964	3306.0
1965	4705.0

Source: Various reports of Ministry of Economy, Ministry of Interior and Ministry of Industry and Mines, adjusted by methods quoted in text.

Notes: The figures for 1954-1958 are based on an index of production of durable goods given by the reports of the Ministry of Industry and Mines.

Table 7-2: Domestically-Produced 'Traditional' Capital Goods, 1900-1965, in Current Prices.

(million rials)

Year	Total	Year	Total
1900	108.4	1933	158.8
1901	109.1	1934	181.2
1902	109.9	1935	219.0
1903	110.8	1936	234.6
1904	111.5	1937	286.8
1905	112.3	1938	299.6
1906	113.1	1939	348.5
1907	114.0	1940	391.4
1908	114.7	1941	562.4
1909	115.6	1942	1102.5
1910	116.4	1943	1679.2
1911	117.3	1944	1757.5
1912	118.0	1945	1714.8
1913	118.9	1946	1623.3
1914	114.3	1947	1877.9
1915	124.9	1948	2059.5
1916	133.7	1949	1833.3
1917	143.6	1950	1775.6
1918	144.6	1951	1942.6
1919	143.4	1952	2116.7
1920	125.1	1953	2646.4
1921	120.4	1954	3143.0
1922	138.4	1955	3330.0
1923	127.7	1956	3531.0
1924	137.9	1957	3738.0
1925	139.0	1958	3968.0
1926	142.3	1959	4204.0
1927	132.4	1960	4674.0
1928	128.3	1961	4987.0
1929	136.4	1962	5127.0
1930	143.5	1963	5493.0
1931	148.1	1964	5979.0
1932	155.5	1965	6669.0

Sources: Sources and methods of estimation given in text.

Table 7-3: Expenditure on Total Domestically-Produced Capital Goods, 1900-1965, in Current Prices.

(million rials)

Year	Total	Year	Total
1900	108.4	1933	158.8
1901	109.1	1934	181.2
1902	109.9	1935	219.0
1903	110.8	1936	234.6
1904	111.5	1937	286.8
1905	112.3	1938	299.6
1906	113.1	1939	348.5
1907	114.0	1940	391.4
1908	114.7	1941	562.4
1909	115.6	1942	1102.5
1910	116.4	1943	1679.2
1911	117.3	1944	1757.5
1912	118.0	1945	1714.8
1913	118.9	1946	1623.3
1914	114.3	1947	1877.9
1915	124.9	1948	2059.5
1916	133.7	1949	1833.3
1917	143.6	1950	1775.6
1918	144.6	1951	1942.6
1919	143.4	1952	2116.7
1920	125.1	1953	2646.4
1921	120.4	1954	3154.2
1922	138.4	1955	3341.2
1923	127.7	1956	3553.7
1924	137.9	1957	3760.7
1925	139.0	1958	4194.3
1926	142.3	1959	5335.0
1927	132.4	1960	6252.0
1928	128.3	1961	6650.0
1929	136.4	1962	6827.0
1930	143.5	1963	7272.6
1931	148.1	1964	9285.0
1932	155.5	1965	11374.0

Sources: Tables 7-1 and 7-2.

Notes

1. Bank Markazi Iran, 'Provisional Estimates of National Income of Iran, 1959-1963', Tehran, 1966, p.14. The Ministry of Economy information quoted applies only to 'modern' industry.

2. United Nations, 'National Accounting Practices in 60 Countries', Studies in Methods, Series F, No.11, New York, 1964, p.34 (British Guyana), p.102 (Guatemala), p.160 (Nigeria).

3. 'Modern' capital goods are assumed to be manufactured in 'modern' industrial establishments - i.e. those with more than 9 employees.

4. See, for example, Iran, Ministry of Economy, General Department of Industrial and Mining Statistics, 'Report on the Results of Annual Industrial Survey of Iran, 1963', Tehran, 1966, p.27.

5. See Appendix O of this study.

6. From annual statistical publications of Iran, Ministry of Industries and Mines; Ministry of Economy; and Ministry of Interior. 1954-1961: 'Industry and Mines Statistical Yearbook', Tehran. 1962-1965: 'Report on the Industrial Census of Iran', and subsequent reports.

7. These were visited in February and March 1967 and include General Motors (Iran), Fiat (Iran), Rover (Iran), and Iran National. Information was supplemented by details in Ministry of Economy, ops. cit.

8. Iran, Ministry of Interior, General Department of Public Statistics, 'Summary of Results of the Industrial Census of Iran, 1963', Tehran, 1965, p.38.

9. Goodfellow, B.R., 'United Nations Industrial Survey Mission to Iran, 1964 - Interim Report to the Government of Iran', Tehran, 1964, restricted, p.37.: Also Iran, Plan Organization, Industrial Estates Authority, 'A Study of the Economic and Industrial Conditions of Tabriz', Tehran, 1966, pp.35-6.

10. Peace, G.L., 'Report on the Development of Small-Scale Industry in Iran', Tehran, 1962, restricted, p.84.

11. C.f. estimates by Bank Markazi Iran, op. cit., pp.21-2.

12. Adib-Soltani makes a similar assumption, though he does not substantiate it. Adib-Soltani, S., 'Domestic Capital Formation in Private Manufacturing Industry in Iran for the period 1948-1957', Tehran, unpublished, 1959, p.1.

13. Iran, Ministry of Labor, 'Statistical Survey of the Major Industrial Plants of Iran, 1947', Tehran, 1948, (persian).

14. It is generally agreed that the 'modernizing' of industry, particularly in the private sector, began in 1953-4. This is certainly true for the production of capital goods. See Ahmadi, A., '12 Years in Constructing a New Iran', Tehran, undated, (1965?), p.35.

15. The distinction between 'traditional' and 'modern' capital goods was suggested by a similar break-down in Rosovsky, H., 'Capital Formation in Japan, 1868-1940', Glencoe, 1961, pp.16-7.

16. Wulff, H.E., 'The Traditional Crafts of Persia', Chicago, 1966.

17. Beckett, P.H.T., 'Tools and Crafts in South Central Persia', in Man, Vol. 57, 1957, pp.145-8. Also Bent, J.T., 'Village Life in Persia', in The New Review, Vol. 5, July-December 1891, p.355-6.

18. Peace, G.L., op. cit., pp.84-5.

19. September 13, 1966. Needless to say, my car required the services of this puncture-repairer.

20. Wulff, H.E., op. cit.

21. In 1965 there were 3894 industrial establishments with more than 9 employees. This constituted three per cent of the total industrial establishments in the country. Iran, Ministry of Economy, Bureau of Statistics, 'Iranian Industrial Statistics, 1965 Yearbook', Tehran, 1967, page 'j'.

22. Those that do exist refer to agricultural implements only. See Chapter 10.

23. Dutta, N.C., 'Fourth Progress Report on Rural Household Consumer Expenditure Surveys - Iran', Tehran, unpublished

and restricted, 1965. Appendix 1, 'Report on the Rural Family Budget Survey of Iran, 1963'.

24. Ibid., p.23.

25. This assumption cannot be substantiated except by the observation that many urban areas (particularly those under 25,000) are little more than large villages, and that individuals in the larger towns do purchase 'traditional' capital goods.

26. See Table 7-1.

27. See Table 6-1.

28. Somermeyer, W.H., 'Draft Final Report on National Income and Accounts in Iran', Tehran, 1963, unpublished and restricted, Annexe 3 (iii).

29. Bank Markazi Iran, 'National Income of Iran, 1959-1965', Tehran, 1967, (persian), p.50.

30. International Bank for Reconstruction and Development, 'Recent Economic Developments in Iran and the Progress of the Third Plan', Department of Operations, South Asia and Middle East, unpublished and restricted, 1964, p.5.

CHAPTER EIGHT

RESIDENTIAL BUILDING

Estimation of an original 65-year series for Gross Domestic Fixed Capital Formation in residential housing construction has been made on the basis of two sets of distinctions. One distinction is between 'urban' and 'rural' places, 'urban' being defined as a place with 5000 or more inhabitants;[1] a second distinction is between 'traditional' housing and 'modern'. 'Traditional' housing is defined as living accommodation constructed of indigenous materials by hand processes which have basically remained unchanged over time. Examples of such housing are dwellings made of mud, wood, straw, or sun-dried bricks. 'Modern' housing, on the other hand, is made of materials such as kiln-fired bricks, iron beams and reinforced concrete.[2]

It is estimated that 99 per cent of all existing rural dwellings in 1956 were in the traditional category,[3] while by 1966 this percentage had dropped only slightly to 97 per cent.[4] In general, therefore, it can be stated that modern dwellings have been almost exclusively an urban phenomenon. In the urban areas of 1966, 56 per cent of all houses were modern,[5] while the 1956 figure for the same areas was 44 per cent.[6] In fact the number of modern houses in Iran more than doubled in the decade 1956-1966, which indicates that most, if not all, of the modern houses of 1956 were constructed in the decade 1946-1956. This

accords with existing data on production, import and consumption of modern materials,[7] and also with information obtained privately on the use of iron beams and cement in house construction.[8]

The methods of estimation employed in this chapter are, for the most part, indirect. With the exception of totals for urban areas between 1960 and 1965, for which a sample survey by the Bank Markazi Iran can be used,[9] estimates have been arrived at by applying average costs of the different types of dwellings to the physical number of such dwellings built each year. But since no comprehensive figures for the annual increase in the stock of dwellings exist, either in the usual form of building permits[10] or annual surveys of the construction industry,[11] they have had to be constructed from data on population growth, the average number of persons per family, the average number of families per house and the average longevity of dwellings. And since information on these four variables is itself scarce, particularly for the years before 1956, the overall reliability of the annual totals presented in this chapter, which is discussed fully in Chapter 10, is necessarily poor.

Indeed, such is the paucity of data that the estimates for the 65-year period of such variables as the population of Iran, its urban/rural breakdown, the number of persons

per family and the longevity of houses are themselves original contributions to the study of the Iranian economy.[12]

The Population of Iran, 1900-1966

No full census of the population of Iran was taken before 1956,[13] and there is considerable doubt about the accuracy of this census.[14] It has been necessary, therefore, to construct annual estimates of the population from 1900-1966. A detailed description of how this was done is given in Appendix A (since published),[15] in which a 'best estimate' of annual population totals is obtained by comparing two methods of backward regression with independent estimates of the population for various years in the 65-year period, including the adjusted census totals for 1956 and 1966. It was found that Iran's population has increased from 9.86 million to 27.07 million in the 66 years from the beginning of the century. The full results are presented in Table 8-1.

Urban and Rural Population, 1900-1966

For the years 1934,[16] 1940,[17] 1956[18] and 1966[19] there are independent estimates of the proportion of total population living in urban and rural places. It is assumed that any differences between the various population totals given for these years and my own 'best estimate' of total population are not biased in favour of either the

urban or the rural component. Thus the urban/rural ratios can be applied to the annual population totals of Table 8-1.

An original estimate of the urban component of the 1900 population has been made by the lengthy process of tracing all places of 5000 or more inhabitants in that year from various sources.[20] A complete list of the 100 urban places (not rounded) is given in Appendix B. The percentage breakdown of total population between urban and rural places for the five known years is as follows:

1901	Urban	21%	Rural	79%
1934		21%		79%
1940		22%		78%
1956		31%		69%
1966		38%		62%

The growth rate of urban and rural population for five periods during the 66 years can therefore be estimated as follows:

Period	Annual (Compound) Rate of Growth Urban Pop.	Rural Pop.	Total Pop.
1900-1926	0.08%	0.08%	0.08%
1927-1934	1.50%	1.50%	1.50%
1935-1940	2.30%	1.30%	1.50%
1941-1956	4.40%	1.40%	2.20%
1957-1966	5.00%	1.80%	2.90%

From these rates it can be seen that net emigration from rural to urban areas probably started in the mid-1930s, and has increased rapidly in the past two decades. (It should be pointed out that the above compound growth rates include places which have changed from rural to urban categories and vice versa.) A complete annual

breakdown of Iran's population between urban and rural places is given in Table 8-1.

Persons Per Family and Families Per House

There is some evidence to support the assertion that the average size of family (household) throughout the whole of Iran was between four and five persons for the period 1900-1965, with the lower figure applying in the earliest years of the study and the higher in 1965.

Estimates for specific areas have often been outside this range,[21] but such estimates have usually conformed with the relevant provincial data in whole-country estimates.[22]

For six years, estimates of the average number of persons per family are made as follows:

1900	4.0 persons[23]
1926	4.0 persons[24]
1935	4.5 persons[25]
1946	4.6 persons[26]
1956	4.8 persons[27]
1966	5.0 persons[28]

These figures represent an annual (compound) growth of the number of persons per family as follows:

Period	Growth of Family Size
1900-1926	0.0%
1927-1934	1.5%
1935-1946	0.3%
1947-1956	0.4%
1957-1966	0.4%

In 1966 it was estimated that, on average, 1.18 families shared each house in rural areas[29] and 1.51

families shared each urban house.[30] The difference between the two figures can be explained partly by the larger size of houses in urban areas in 1966,[31] but also by the fact that there has been (and still is) considerable overcrowding in town houses,[32] mainly as a result of the inflow of migrants from rural areas.[33] In the absence of any evidence to the contrary, it is assumed that these two figures hold for the entire 65-year period. This assumption is admittedly weak, in view of the estimated rates of rural/urban migration at different periods presented above, but is supported to a small extent by reports of urban overcrowding in the earlier years of the study.[34]

Longevity of Houses

Since modern houses have only been built from the mid-1940s, and since they are generally expected to last longer than traditional houses,[35] it is clear that the replacement of houses at the end of their lives during the period under study is exclusively a matter of replacing traditional houses. It has already been stated that rural houses have been almost entirely of the traditional variety, so it is possible to estimate the life of a traditional house from that of a rural house. This can be done from 1966 data on the number of rural houses constructed in the decade 1956-1966.[36] The percentage increase

over the ten years is assumed to be dependent on three variables; the rate of population growth, the growth in family size and the replacement factor. This replacement factor was found to equal 60 per cent of the decadal housing growth or 2.1 per cent per year, which, by taking the reciprocal, implies a house-life of 48 years.

No estimate has previously been made about the average life of a traditional house, so it is difficult to discuss the reliability of the method employed above. It is certainly true that traditional houses are easily destroyed by floods,[37] minor earth tremors[38] and even seasonal rains.[39] This has given many observers the impression that the life of such houses is short - perhaps as low as 10 years.[40] Nevertheless, it has been pointed out that regular repairs and maintenance can keep a house in good condition for at least a human life-span,[41] and since this has been recently estimated at 43 years and 50 years,[42] it may well be that a house-life of 48 years as an average is near the actual figure.[43]

One further rough check on the figure of 48 years can be made by comparing the average annual number of replacement houses in the decade 1956-1966 with the total number of houses built each year in the decade 1906-1916 (roughly 50 years previously). This is done for both urban and rural areas later in this chapter.

* * * *

Rural Houses

The stock of rural houses in Iran in 1966 has been estimated at 2.599 million for the settled population of the country.[44] However, for present purposes this total has been marked up by five per cent for undercoverage and by 0.135 million to account for the houses (either portable or fixed) of the unsettled population.[45] Thus a base figure of 2.842 million is obtained for the total stock of rural houses in the country. The annual rate of growth of the stock of rural houses is assumed to be dependent on the rate of rural population growth and the changing size of families. By applying a combined rate of growth of these two factors,[46] it has therefore been possible to estimate the annual stock of houses for the years 1900-1966. This is shown in Table 8-2, which also gives the net increase in the stock of houses each year.

Given that the life of a traditional rural house is around 50 years, an estimate can be made of the number of houses built each year as replacements. It is assumed that the rural population remained stable at 7.5 million for the years before 1895,[47] and that consequently a fixed number of replacement houses (0.034 million) was needed for the years 1900-1945. For the years 1946-1956 the estimated number of replacement houses is given by the gross additions to the housing stock in the years 1896-

1906 (0.046 million) and for the years 1957-1966 the overall growth rate of rural housing as given by the 1966 housing census is used. Annual gross additions to the stock of rural houses are shown in Table 8-2.

A check on the methods of estimation and on the assumed life of rural houses is given by the fact that the average number of replacement houses built in the decade 1956-1966 (60 per cent of 0.080 million = 0.048 million) is approximately the same as the gross annual additions to the housing stock 50 years before (0.013 million + 0.034 million = 0.047 million).

Rural Housing Costs

There is no published estimates of the average cost of rural housing for any year in Iran.[48] However, it is possible to compare information obtained privately on rural housing costs with Bank Markazi Iran data on the average cost of traditional houses in small urban areas. In 1966 the Bank estimates the cost of a 58 m^2 structure (this appears to be a fairly standard size for traditional structures) in a small urban area as 50,000 rials.[49] A highly reliable private source gives a cost of 25,000 rials in the same year for a 36 m^2 structure of the same type.[50] When grossed up to 58 m^2, this produces a cost of 40,000 rials (assuming costs rise proportionately), which is 20 per cent less than the cost of a similar

house in a small urban area. It is assumed here that this 20 per cent difference is due to the higher cost of labour and materials in towns,[51] and that the figure of 40,000 rials which is confirmed by two other sources[52] is appropriate for the average cost of a traditional rural house in 1965.

G.D.F.C.F. in rural housing construction at constant (1965) rials equals the gross annual additions to the stock of rural housing multiplied by 40,000 rials, these results being given in Table 8-3. Estimates at current prices are made by multiplying the gross annual increase of rural houses by 40,000 rials deflated by the wholesale price index[53] in the absence of any other suitable deflator.[54] These are also presented in Table 8-3.

Implied in the above methods of calculation are two more assumptions. Firstly, it is assumed that all traditional rural houses are made of mud and/or sun-dried brick. In fact, in 1966, only 74 per cent of rural houses were constructed of these materials (78 per cent in 1956).[55] However, it is reasonable to assume that houses made of wood, stone or a combination of these materials have approximately the same initial costs and the same life-span as mud and sun-dried brick structures. There remains the problem of houses constructed of straw and tent-materials. Private sources have indicated that,

in tribal areas, tents last the length of a marriage (say 35 years given that marriages are made young), but may be handed down to the next generation, which implies a life not dissimilar from that of a mud house.[56] For straw houses it is assumed that a shorter life-span is compensated by a directly proportional difference in costs so that total G.D.F.C.F. in any year is not affected by this shorter life.

A second assumption is that there is no difference between the settled part of the population and the unsettled in terms of the variables affecting housing costs. This is particularly relevant for the years 1900-1930 during which period as much as 30 per cent of the rural population was nomadic or semi-nomadic.[57] Again, there is no information to suggest that a difference exists.

To conclude the section on rural houses it is worth comparing the above, admittedly crude, methods of estimation with those used by the Bank Markazi Iran and Homayoon. The former grosses up the per capita construction expenditure in the small city of Khorramdarreh ('the only small city for which the construction expenditure data were available')[58] by the total rural population.[59] The latter employs the formula

$$Ri = \frac{Ui}{Uc} \cdot Rc$$

where R = rural, U = urban (for 3 small cities), i = per capita construction expenditure and c = per capita consumption expenditure.[60] The 'samples' employed in these two processes have little scientific justification and are possibly quite irrelevant to the purposes of the calculation. A localised construction boom in Khorramdarreh, for example, would play havoc with the rural estimates. In any case, it has already been stated that costs of both labour and materials are likely to be lower in rural areas.

Urban Houses

For the years 1960-1965 it is possible to make use of a survey of urban constructional activity carried out by the Bank Markazi Iran.[61] This survey has been examined carefully from theoretical and practical standpoints and has also been checked against an independent estimate of the stock of urban houses in 1966.

The survey consists of a base survey, made in 1964, to obtain historical data (for five years) on the stock, types and costs of urban houses,[62] and a continuing quarterly survey of urban constructional activity. Urban places are defined as those with 5000 or more population in 1956, and are divided between Tehran, nine large urban areas, and 171 smaller urban places. Each of these areas is divided into blocks, small non-block segments and large

non-block segments; blocks are lightly sampled, small non-blocks are heavily sampled and large non-blocks are included in full. For the 171 smaller urban areas, a sample of 22 towns is used, these being divided into seven strata based on size of population, and weighted according to the representation of selected areas in strata totals.[63] 'The surveys were designed to produce an expected five per cent sample. In actual fact, the enumerated sample was 5.2 per cent of the survey estimated inventory of structures in all urban areas of Iran.'[64]

On the basis of knowledge of the distribution of urban population between the three classes of urban area, of the size of the urban population, and of methods of construction in urban areas, I consider that the structure and size of the sample is adequate for the purposes of estimating the number and costs of urban buildings constructed each year.[65] Moreover from discussions with the foreign adviser to the survey[66] and the Iranian statisticians and enumerators who carry out the survey,[67] I am convinced that considerable efforts have been made to reduce both sampling and response errors. One independent check is possible on the stock of houses estimated by the Bank in November 1966. It is found that, having made an adjustment for houses built in places which have entered the urban category since 1956,[68] the stock of houses esti-

mated by the Bank (1.260 million) amounts to 97 per cent of the stock estimated by the 1966 housing census (1.301 million).[69] Since minor differences are to be found in the geographical limits to urban areas[70] and in the definition of houses,[71] it can be concluded that the two studies are of approximately the same degree of reliability - producing results within five per cent of the actual totals.[72]

G.D.F.C.F. in urban housing for the years 1960-1965 is shown in Table 8-4. It consists of the annual figures given by the Bank for residential structures plus 50 per cent of the annual figures for 'residential with business' structures plus 10 per cent of these totals for the smaller urban areas to account for residential building in new (small) urban places. The annual G.D.F.C.F. totals are broken down on the basis of the traditional/modern distinction, using the Bank's own estimate for all structures and the assumption that this estimate applies without adjustment to residential and partly residential structures.[73]

For the years 1900-1959, the method of estimation follows closely the pattern used in estimating G.D.F.C.F. in rural housing (the annual stock of urban housing and the gross and net additions to this stock are given in Table 8-5), with the exception that for the years 1946-

1959 costing is done separately for traditional and modern housing. Annual average costs of modern houses in this period have been calculated by application of an index of building materials prices in urban areas to 1965 prices.[74] All urban houses built before 1946 are assumed to be of the traditional type, and annual average costs are found by means of Bank data or by the application of the wholesale price index to such data, as was done in the rural estimates.[75] The final estimates of G.D.F.C.F. in urban housing for the years 1900-1965 in both current and constant (1965) rials are given in Table 8-6. It can be seen that the longevity check, as applied to rural housing, also applies to construction and replacement of housing in urban areas.

Estimates of annual G.D.F.C.F. in both urban and rural areas for the years 1900-1965 are presented in Table 8-7. These estimates are discussed fully in Chapter 5.

At this stage it must be reported that an unsuccessful attempt was made to construct a linear regression equation relating the growth of housing and the growth of population in 37 large cities of Iran.[76] The correlation between these two variables was high ($r = 0.79$) and the regression equation obtained was

$$Y = 4.7 + 1.28X$$

where Y = decadal growth of housing and X = decadal growth

of population, both relating to the decade 1956-1966. However, with a standard error of estimate of 18.9, it can be shown (by application of the Student's t significance test) that the regression coefficient of 1.28 has no significance at any level.[77] Due to lack of data it was not possible to construct a multiple regression equation including other variables such as the average size of family, the average number of families per house and the life of houses. Thus no mathematical relationship could be found between them and the growth of housing. Where use has been made of these variables in this chapter it has been in rough form with application only to the overall figures for either urban or rural areas.

Table 8-1: The Population of Iran 1900-1966 - Urban and Rural Components

(in millions)

Year	Total	Urban	Rural	Year	Total	Urban	Rural
1900	9.86	2.07	7.79	1934	13.32	2.80	10.52
1901	9.92	2.08	7.84	1935	13.52	2.86	10.66
1902	9.99	2.10	7.89	1936	13.72	2.93	10.79
1903	10.07	2.11	7.96	1937	13.92	2.99	10.93
1904	10.14	2.13	8.01	1938	14.13	3.06	11.07
1905	10.21	2.14	8.07	1939	14.34	3.13	11.21
1906	10.29	2.16	8.13	1940	14.55	3.20	11.35
1907	10.36	2.18	8.18	1941	14.76	3.33	11.43
1908	10.43	2.19	8.24	1942	14.98	3.48	11.50
1909	10.51	2.21	8.30	1943	15.21	3.63	11.58
1910	10.58	2.22	8.36	1944	15.43	3.79	11.64
1911	10.66	2.24	8.42	1945	15.66	3.96	11.70
1912	10.73	2.25	8.48	1946	15.93	4.13	11.80
1913	10.81	2.27	8.54	1947	16.43	4.31	12.12
1914	10.89	2.29	8.60	1948	16.73	4.49	12.24
1915	10.96	2.30	8.66	1949	17.15	4.69	12.46
1916	11.05	2.32	8.73	1950	17.58	4.89	12.69
1917	11.13	2.34	8.79	1951	18.02	5.11	12.91
1918	11.21	2.35	8.86	1952	18.47	5.33	13.14
1919	11.29	2.37	8.92	1953	18.93	5.56	13.37
1920	11.37	2.39	8.98	1954	19.40	5.80	13.60
1921	11.47	2.41	9.06	1955	19.88	6.05	13.83
1922	11.52	2.42	9.10	1956	20.38	6.32	14.06
1923	11.61	2.44	9.17	1957	20.96	6.65	14.31
1924	11.69	2.45	9.24	1958	21.57	7.00	14.57
1925	11.78	2.47	9.31	1959	22.19	7.37	14.82
1926	11.86	2.49	9.37	1960	22.83	7.76	15.07
1927	12.04	2.53	9.51	1961	23.48	8.17	15.31
1928	12.22	2.57	9.65	1962	24.15	8.60	15.55
1929	12.40	2.60	9.80	1963	24.85	9.05	15.80
1930	12.59	2.64	9.95	1964	25.56	9.53	16.03
1931	12.77	2.68	10.09	1965	26.30	10.03	16.27
1932	12.96	2.72	10.24	1966	27.07	10.56	16.51
1933	13.12	2.76	10.36				

Source: J. Bharier

Notes: For methods of Estimation, see text.

Table 8-2: The Stock of Rural Houses, 1900-1966, and Annual Net and Gross Additions to this Stock

(in millions)

Year	Stock of Houses	Annual Net Increase	Replacem.	Gross Addit.
1900	1.660	0.012	0.034	0.046
1901	1.672	0.012	0.034	0.046
1902	1.683	0.011	0.034	0.045
1903	1.695	0,012	0.034	0.046
1904	1.708	0.013	0.034	0.047
1905	1.720	0.012	0.034	0.046
1906	1.733	0.013	0.034	0.047
1907	1.745	0.012	0.034	0.046
1908	1.757	0.012	0.034	0.046
1909	1.770	0.013	0.034	0.047
1910	1.783	0.013	0.034	0.047
1911	1.795	0.012	0.034	0.046
1912	1.808	0.013	0.034	0.047
1913	1.821	0.013	0.034	0.047
1914	1.834	0.013	0.034	0.047
1915	1.847	0.013	0.034	0.047
1916	1.860	0.013	0.034	0.047
1917	1.874	0.014	0.034	0.048
1918	1.887	0.013	0.034	0.047
1919	1.900	0.013	0.034	0.047
1920	1.915	0.015	0.034	0.049
1921	1.928	0.013	0.034	0.047
1922	1.942	0.014	0.034	0.048
1923	1.956	0.014	0.034	0.048
1924	1.970	0.014	0.034	0.048
1925	1.984	0.014	0.034	0.048
1926	1.993	0.009	0.034	0.043
1927	2.012	0.019	0.034	0.053
1928	2.012	0	0.034	0.034
1929	2.012	0	0.034	0.034
1930	2.012	0	0.034	0.034
1931	2.012	0	0.034	0.034
1932	2.012	0	0.034	0.034
1933	2.012	0	0.034	0.034
1934	2.012	0	0.034	0.034
1935	2.012	0	0.034	0.034
1936	2.034	0.022	0.034	0.056
1937	2.054	0.020	0.034	0.054
1938	2.075	0.021	0.034	0.055
1939	2.098	0.023	0.034	0.057

continued.....

Table 8-2 continued:

Year	Stock of Houses	Annual Net Increase	Replacem.	Gross Addit.
1940	2.120	0.022	0.034	0.056
1941	2.134	0.024	0.034	0.058
1942	2.168	0.024	0.034	0.058
1943	2.192	0.024	0.034	0.058
1944	2.217	0.025	0.034	0.059
1945	2.242	0.025	0.034	0.059
1946	2.268	0.026	0.046	0.072
1947	2.290	0.022	0.046	0.068
1948	2.313	0.023	0.046	0.069
1949	2.336	0.023	0.046	0.069
1950	2.349	0.023	0.046	0.069
1951	2.383	0.024	0.046	0.070
1952	2.406	0.023	0.046	0.069
1953	2.430	0.024	0.046	0.070
1954	2.455	0.025	0.046	0.071
1955	2.479	0.024	0.046	0.070
1956	2.504	0.025	0.046	0.071
1957	2.536	0.032	0.038	0.070
1958	2.568	0.032	0.039	0.071
1959	2.600	0.032	0.043	0.075
1960	2.634	0.034	0.042	0.076
1961	2.668	0.034	0.046	0.080
1962	2.701	0.033	0.050	0.083
1963	2.736	0.035	0.049	0.084
1964	2.770	0.034	0.054	0.088
1965	2.806	0.036	0.054	0.090
1966	2.842	0.036	0.059	0.095

Source: J. Bharier

Notes: a. Methods of Estimation: See text.
b. Gross Additions for 1956-1966 estimated directly.

Table 8-3: Gross Domestic Fixed Capital Formation in Rural Housing, 1900-1965

(millions of rials)

Year	1965 Prices	Current Prices	Year	1965 Prices	Current Prices
1900	1840.0	110.4	1934	1360.0	100.6
1901	1840.0	110.4	1935	1360.0	119.7
1902	1800.0	108.0	1936	2240.0	208.3
1903	1840.0	110.4	1937	2160.0	241.9
1904	1880.0	112.8	1938	2200.0	253.0
1905	1840.0	110.4	1939	2280.0	303.2
1906	1880.0	112.8	1940	2240.0	327.0
1907	1840.0	110.4	1941	2320.0	480.2
1908	1840.0	110.4	1942	2320.0	928.0
1909	1880.0	112.8	1943	2320.0	1392.0
1910	1880.0	112.8	1944	2360.0	1460.8
1911	1840.0	110.4	1945	2360.0	1401.8
1912	1880.0	112.8	1946	2880.0	1595.5
1913	1880.0	112.8	1947	2720.0	1689.1
1914	1880.0	107.2	1948	2760.0	1846.4
1915	1880.0	116.6	1949	2760.0	1600.8
1916	1880.0	124.1	1950	2760.0	1512.5
1917	1920.0	134.4	1951	2800.0	1640.8
1918	1880.0	131.6	1952	2760.0	1719.5
1919	1880.0	129.7	1953	2800.0	2228.8
1920	1960.0	117.6	1954	2840.0	2504.9
1921	1880.0	107.2	1955	2800.0	2380.0
1922	1920.0	124.8	1956	2840.0	2601.4
1923	1920.0	115.2	1957	2800.0	2517.2
1924	1920.0	122.9	1958	2840.0	2521.9
1925	1920.0	122.9	1959	3000.0	2712.0
1926	1720.0	111.8	1960	3040.0	2802.9
1927	2120.0	127.2	1961	3200.0	2956.8
1928	1360.0	77.5	1962	3320.0	3110.8
1929	1360.0	81.6	1963	3360.0	3158.4
1930	1360.0	84.3	1964	3520.0	3488.3
1931	1360.0	85.7	1965	3600.0	3600.0
1932	1360.0	88.4			
1933	1360.0	89.8			

Source: J. Bharier

Note: Methods of Estimation given in text.

Table 8-4: Summary Results of Bank Markazi Iran Urban Housing Data, 1960-1965

Year	Houses Built During Year	Proportion of Modern Houses	Value of Houses Built in Year (million rials)
1960	52017	81%	10072.0
1961	56668	80%	10356.0
1962	44503	80%	7903.0
1963	49428	85%	8690.0
1964	59450	84%	12045.0
1965	61757	82%	13157.0
1959*	29959	82%	6794.0

Source: Bank Markazi Iran, 'Bulletin', no.26, continuing.

Notes: Methods of adaptation of figures are given in text.
*The data for 1959 appears to be grossly understated and is therefore not used in this study. The average proportion of modern houses built in urban areas each year (82%) is utilized in Tables 8-5 and 8-6.

Table 8-5: The Stock of Urban Houses, 1900-1959, and Annual Net and Gross Additions to this Stock

(in millions)

Year	Stock of houses	Annual net inc.	Replace-ments	Annual Gross Additions Tradit.	Modern
1900	0.344	0.003	0.007	0.010	-
1901	0.347	0.003	0.007	0.010	-
1902	0.349	0.002	0.007	0.009	-
1903	0.352	0.003	0.007	0.010	-
1904	0.354	0.002	0.007	0.009	-
1905	0.357	0.003	0.007	0.010	-
1906	0.359	0.002	0.007	0.009	-
1907	0.362	0.003	0.007	0.010	-
1908	0.365	0.003	0.007	0.010	-
1909	0.367	0.002	0.007	0.009	-
1910	0.370	0.003	0.007	0.010	-
1911	0.372	0.002	0.007	0.009	-
1912	0.375	0.003	0.007	0.010	-
1913	0.378	0.003	0.007	0.010	-
1914	0.380	0.002	0.007	0.009	-
1915	0.383	0.003	0.007	0.010	-
1916	0.386	0.003	0.007	0.010	-
1917	0.389	0.003	0.007	0.010	-
1918	0.392	0.003	0.007	0.010	-
1919	0.394	0.002	0.007	0.009	-
1920	0.397	0.003	0.007	0.010	-
1921	0.400	0.003	0.007	0.010	-
1922	0.403	0.003	0.007	0.010	-
1923	0.406	0.003	0.007	0.010	-
1924	0.409	0.003	0.007	0.010	-
1925	0.412	0.003	0.007	0.010	-
1926	0.415	0.003	0.007	0.010	-
1927	0.418	0.003	0.007	0.010	-
1928	0.418	0	0.007	0.007	-
1929	0.418	0	0.007	0.007	-
1930	0.418	0	0.007	0.007	-
1931	0.418	0	0.007	0.007	-
1932	0.418	0	0.007	0.007	-
1933	0.418	0	0.007	0.007	-
1934	0.418	0	0.007	0.007	-
1935	0.418	0	0.007	0.007	-
1936	0.426	0.008	0.007	0.015	-
1937	0.435	0.009	0.007	0.016	-
1938	0.444	0.009	0.007	0.016	-
1939	0.453	0.009	0.007	0.016	-

continued.....

Table 8-5 continued:

Year	Stock of houses	Annual net inc.	Replace-ments	Annual Gross Additions Tradit.	Modern
1940	0.462	0.009	0.007	0.016	-
1941	0.481	0.019	0.007	0.026	-
1942	0.501	0.020	0.007	0.027	-
1943	0.522	0.021	0.007	0.028	-
1944	0.544	0.022	0.007	0.029	-
1945	0.566	0.022	0.007	0.029	-
1946	0.590	0.024	0.010	0.006	0.028
1947	0.613	0.023	0.010	0.006	0.027
1948	0.637	0.024	0.010	0.006	0.028
1949	0.663	0.026	0.010	0.006	0.030
1950	0.689	0.026	0.010	0.006	0.030
1951	0.717	0.028	0.010	0.007	0.031
1952	0.745	0.028	0.010	0.007	0.031
1953	0.775	0.030	0.010	0.007	0.033
1954	0.806	0.031	0.010	0.007	0.034
1955	0.838	0.032	0.010	0.008	0.034
1956	0.872	0.034	0.010	0.008	0.036
1957	0.912	0.040	0.010	0.009	0.041
1958	0.954	0.042	0.010	0.009	0.043
1959	0.998	0.044	0.010	0.010	0.044

Source: J. Bharier

Note: Methods of Estimation given in text.

Table 8-6: Gross Domestic Fixed Capital Formation in Urban Housing, 1900-1965

(millions of rials)

Year	1965 Prices	Current Prices	Year	1965 Prices	Current Prices
1900	500.0	30.0	1934	350.0	26.0
1901	500.0	30.0	1935	350.0	31.0
1902	450.0	27.0	1936	750.0	70.0
1903	500.0	30.0	1937	800.0	90.0
1904	450.0	27.0	1938	800.0	92.0
1905	500.0	30.0	1939	800.0	106.0
1906	450.0	27.0	1940	800.0	117.0
1907	500.0	30.0	1941	1300.0	269.0
1908	500.0	30.0	1942	1350.0	540.0
1909	450.0	27.0	1943	1400.0	840.0
1910	500.0	30.0	1944	1450.0	898.0
1911	450.0	27.0	1945	1450.0	861.0
1912	500.0	30.0	1946	7300.0	4324.0
1913	500.0	30.0	1947	7050.0	4047.0
1914	450.0	26.0	1948	7300.0	4814.0
1915	500.0	31.0	1949	7800.0	5004.0
1916	500.0	33.0	1950	7800.0	4342.0
1917	500.0	35.0	1951	8100.0	4475.0
1918	500.0	35.0	1952	8100.0	4442.0
1919	450.0	31.0	1953	8600.0	5485.0
1920	500.0	30.0	1954	8850.0	7534.0
1921	500.0	29.0	1955	8900.0	7922.0
1922	500.0	33.0	1956	9400.0	9015.0
1923	500.0	30.0	1957	10700.0	10594.0
1924	500.0	32.0	1958	11200.0	11451.0
1925	500.0	32.0	1959	11500.0	12442.0
1926	500.0	33.0	1960	10072.0	10923.0
1927	350.0	21.0	1961	10356.0	9990.0
1928	350.0	20.0	1962	7903.0	7458.0
1929	350.0	21.0	1963	8690.0	7986.0
1930	350.0	22.0	1964	12045.0	11980.4
1931	350.0	22.0	1965	13157.0	13157.0
1932	350.0	23.0			
1933	350.0	23.0			

Source: J. Bharier

Note: Methods of Estimation given in text.

Table 8-7: Gross Domestic Fixed Capital Formation in Housing, All Iran, 1900-1965

(millions of rials)

Year	1965 Prices	Current Prices	Year	1965 Prices	Current Prices
1900	2340.0	140.0	1934	1710.0	127.0
1901	2340.0	140.0	1935	1710.0	151.0
1902	2250.0	135.0	1936	2990.0	278.0
1903	2340.0	140.0	1937	2960.0	332.0
1904	2330.0	140.0	1938	3000.0	345.0
1905	2340.0	140.0	1939	3080.0	409.0
1906	2330.0	140.0	1940	3040.0	444.0
1907	2340.0	140.0	1941	3620.0	749.0
1908	2340.0	140.0	1942	3670.0	1468.0
1909	2330.0	140.0	1943	3720.0	2232.0
1910	2380.0	143.0	1944	3810.0	2359.0
1911	2290.0	137.0	1945	3810.0	2263.0
1912	2380.0	143.0	1946	10180.0	5920.0
1913	2380.0	143.0	1947	9770.0	5736.0
1914	2330.0	133.0	1948	10060.0	6660.0
1915	2380.0	148.0	1949	10560.0	6605.0
1916	2380.0	157.0	1950	10560.0	5855.0
1917	2420.0	169.0	1951	10900.0	6116.0
1918	2380.0	167.0	1952	10860.0	6162.0
1919	2330.0	161.0	1953	11400.0	7714.0
1920	2460.0	148.0	1954	11690.0	10039.0
1921	2380.0	136.0	1955	11700.0	10302.0
1922	2420.0	158.0	1956	12240.0	11616.0
1923	2420.0	145.0	1957	13500.0	13111.0
1924	2420.0	155.0	1958	14040.0	13973.0
1925	2420.0	155.0	1959	14500.0	15154.0
1926	2220.0	145.0	1960	13112.0	13726.0
1927	2470.0	148.0	1961	13556.0	12947.0
1928	1710.0	98.0	1962	11223.0	10569.0
1929	1710.0	103.0	1963	12050.0	11144.0
1930	1710.0	106.0	1964	15565.0	15468.7
1931	1710.0	108.0	1965	16757.0	16757.0
1932	1710.0	111.0			
1933	1710.0	113.0			

Source: Tables 8-3 and 8-6.

Notes

1. This distinction is used in the national population censuses of 1956 and 1966. See Ministry of Interior, Public Statistics Department, 'National and Province Statistics of the First Census of Iran: November 1956', Volume 1, Tehran, 1961, p.xxvii; Also Plan Organization, Iranian Statistical Centre, 'National Census of Population and Housing, November 1966', Volume 168, Tehran, 1968, page b.

2. A similar distinction is found in Rosovsky, H., 'Capital Formation in Japan 1868-1940', Glencoe, 1961, pp.16-18.

3. Plan Organization, op. cit., p.v.

4. Ibid., p.v.

5. Ibid., p.v.

6. Ibid., p.v.

7. Industrial and Mining Development Bank of Iran, 'A Survey Report on Building Material Industries and Construction Indices', Tehran, 1962, pp.3-7, 32.

8. Information from conversations with Engineer M. Sepahi, Architectural Engineer, October 18, 1966; Engineer M. Khajavi, Head of Valuation Department, Mortgage Bank of Iran, April 15, 1967.

9. Bank Markazi Iran, 'Bulletin', Volume 5, No.26, July-August 1966, continuing.

10. Construction permits for the years 1953-1959 for Tehran only can be found in Vieille, P., 'Tehran, Les Prix, Le Marche des Terrains, et La Societe Urbaine', Tehran, 1962, p.192. Apart from a general lack of information on costs, they are also considered unreliable. See Homayoon, B., 'National Income of Iran, 1959-1962', Bangkok, 1964, pp.16-17.

11. Ministry of Economy figures on output of the construction industry from 1963 apply only to constructional establishments with 10 or more employees, which represents only a small fraction of total constructional activity.

12. See Chapter 1.

13. As implied by the title of this census: Ministry of Interior, Public Statistics Department, op. cit.

14. See discussion in Appendix A.

15. Bharier, J., 'A Note on the Population of Iran, 1900-1966', in Population Studies, July 1968, pp. 273 ff.

16. International Labor Review, 'Agricultural and Industrial Activity and Manpower in Iran', in Volume LIX, No.5, May 1949, p.550. Estimate applies to places over 6000 population and has therefore been adjusted to ensure consistency with other estimates.

17. Hadary, G., and Sai, K., 'Handbook of Agricultural Statistics of Iran', Tehran, 1949, p.3.

18. Ministry of Interior, op. cit., p.2.

19. Plan Organization, Iranian Statistical Centre, op. cit., page k.

20. Including all volumes and editions of Government of India, 'Gazetteer of Persia', Simla; Curzon, G.N., 'Persia and the Persian Question', London, 1891.

21. See, for example, Murray, J., 'Iran Today', Tehran, unpublished, 1950, p.32 (Damavand area); Spence, C.C., 'Report to the Government of Iran on Farming Potentials for Irrigation in Khuzestan', F.A.O. Report No.451, Rome, 1956.

22. Administrator-General of the Finances of Persia, 'Quarterly Report No.20', Tehran, 1927, Table 29; Ministry of Interior, op. cit., pp.21 ff; Plan Organization, Iranian Statistical Centre, op. cit., pp. preface.

23. Government of India, op. cit., (1910 edition), pp.18, 49, 245, 278, 634. Different authors in the Gazetteer use different numbers of persons per family, but 4.0 persons is the estimate generally used.

24. Administrator-General of the Finances of Persia, op. cit., Table 29.

25. Bank Melli Iran, 'Bulletin', No.6, October 1935, pp.1-10. Estimate of 4.7 persons per urban family of moderate means is marked down by 0.2 to produce a country-wide average.

26. Estimate based on the growth of family size in the decade 1956-1966, with the assumption that this growth rate applied in the previous decade.

27. Ministry of Interior, op. cit., p.21.

28. Plan Organization, Iranian Statistical Centre, op. cit., page k.

29. Figures from Plan Organization, Iranian Statistical Centre, op. cit., pp.187-188.

30. Ibid., pp.187-188.

31. Ibid., pp.188. Figures show that 43 per cent of urban houses had more than three rooms, compared with 23 per cent of rural houses.

32. Plan Organization, 'Third Plan Frame - Physical Development and Related Programs', Tehran, 1961, unpublished, pp.71-2.

33. Overseas Consultants Inc., 'Report on Seven Year Development Plan for the Plan Organization of the Imperial Government of Iran', New York, 1949, Volume 3, p.239. See also urban growth figures in text of this chapter.

34. Ibid., p.238.

35. Information in conversation from Engineer Khajavi, Head of Valuation Department, Mortgage Bank of Iran, April 22, 1967, who states that because of low humidity and little possibility of rising damp, the life of a modern house is almost infinite.

36. Plan Organization, Iranian Statistical Centre, op. cit., p.190.

37. Warne, W.E., 'Mission for Peace', Indianapolis, 1956, pp.167-8.

38. Moinfar, A.A., 'Earthquake Engineering Trends in Iran', Tehran, 1965, pp.2 ff.

39. English, P.W., 'City and Village in Iran', Wisconsin, 1966, p.9.

40. Plan Organization, 'Third Plan Frame ....', op. cit., p.82. See also assumptions for similar housing in

Iraq in Hashim, J.M., 'Capital Formation in Iraq, 1957-62', London University Ph.D. Thesis, 1966, unpublished, p.482. And Spence, C.C., op. cit., p.21, who takes 6-8 years as the maximum life of a rural house without maintenance.

41. Information from Ray Heizer of the U.S. Peace Corps in Iran, April 26, 1967.

42. Chasteland, J.C., et al., 'La Population de l'Iran - Perspectives d'Evolution, 1956-1986', Tehran, 1966, p.243. U.S. Aid 'Selected ....', op. cit., p.12.

43. Plan Organization, 'Third Plan ....', op. cit., p.82: 'The life span of other houses of mudbrick, mudbrick and brick and brick can be estimated to be anywhere between 20 and 60 years'.

44. Plan Organization, Iranian Statistical Centre, op. cit., p.190.

45. The undercoverage percentage is discussed in Appendix A; the figure of houses of the unsettled population is based on an estimate of the unsettled population in 1966 in Swan, E.P., 'Highlights of the 1966 Census of Iran', Tehran, 1967, unpublished, p.1. This estimate is increased by five per cent for undercoverage, and an average of five persons per house is assumed.

46. It is assumed that growth of housing is positively correlated with population growth and negatively correlated with the growth of family size.

47. It is quite likely that the population fluctuated considerably in the 19th century. 7.5 million is taken as a mean figure.

48. Homayoon, B., op. cit., p.18.

49. Bank Markazi Iran, 'Bulletin', Volume 6, No.33, Sept.-Oct. 1967, p.375.

50. Information from Ray Heizer, of the American Peace Corps, who has studied rural housing costs carefully in the area of Yazd. (In conversation April 26, 1967).

51. Plan Organization, 'Third Plan ....', op. cit., p.77.

52. Average price of a mud-brick house in the Chahar Mahal area is given as between 40-50,000 rials, depending on

the amount of wood used. David Brooks, from data gathered for Oxford University D. Phil. thesis, July 19, 1967. Average price of a mud-brick house in Khuzestan is 40,000 rials (1956), see Spence, C.C., op. cit., p.21.

53. Bank Melli Iran, 'The Revised Wholesale Price Index', in 'Bulletin', no.227, February 1961, pp.1-43; continued in Bank Markazi Iran, 'Bulletin', Vol.1, No.1, continuing.

54. An index of building material prices exists from 1936-1965, but this applies only to modern building materials and only to urban areas.

55. Plan Organization, Iranian Statistical Centre, op. cit., p.190.

56. David Brooks, in conversation, July 19, 1967.

57. United Kingdom, Foreign Office, 'Persia', Peace Handbook no.80, confidential, London, 1919, p.9.

58. Bank Markazi Iran, 'Provisional Estimates of National Income of Iran, 1959-1963', Tehran, 1966, p.17.

59. Ibid., p.17.

60. Homayoon, B., op. cit., p.18.

61. Bank Markazi Iran, 'Bulletin', Vol.4, No.20, July-August 1965, continuing.

62. Completed in Bank Markazi Iran, 'Bulletin', Vol.5, No.26, July-August 1966, pp.206-232.

63. Ibid., pp.211-2.

64. Ibid., p.211.

65. Sampling errors have not been calculated: Ibid., p.211.

66. Conversation with Charles Merzel, U.S. A.I.D. adviser to Bank Markazi Iran, April 18, 1967.

67. Conversations with H. Mehrabani, A. Azad and others in the Bank Markazi Iran Statistical Bureau between October 1966 and May 1967.

68. The figure for November 1966 is marked up by 10 per cent of the total houses in small urban areas.

69. Plan Organization, Iranian Statistical Centre, op. cit., p.190.

70. Information from Charles Merzel, April 18, 1967.

71. Compare Bank Markazi Iran, 'Bulletin', No.26, p.212 with Plan Organization, Iranian Statistical Centre, op. cit., p. c and d.

72. See discussion in Chapter 10.

73. The Bank Markazi Iran figures for 1959 are considered unreliable, and are not used. They appear to have considerably understated the true amounts.

74. Bank Melli Iran, op. cit., pp.1-43.

75. Ibid., pp.1-43.

76. From data in individual volumes of 1966 Census of Population.

77. I am grateful for advice on this matter to John K. Welsby and Biplab Das Gupta.

C H A P T E R N I N E

OTHER BUILDING AND WORKS

Gross Domestic Fixed Capital Formation in other building and works is estimated in a number of separate parts due to the exigencies of available data. For the most part, such data are scarce and of low reliability, with an almost complete lack of the types of breakdown relevant to the estimation. Extensive use has been made therefore of ratios found, or assumed to exist, between the required data and those which are available.

Private Non-Residential Construction

A reliable survey of private construction in urban areas for the years 1959-1965 has been made by the Bank Markazi Iran.[1] This survey indicates an almost constant relationship over the six-year period between expenditure on non-residential building and expenditure on dwellings.[2] The mean percentage of the former over the latter is 27% for all urban areas and also for small urban areas (Table 9-1). It is reasonable to assume, therefore, that this percentage also applies to rural areas. Consequently, it is applied to the estimates of G.D.F.C.F. in residential housing (Table 8-7) for the years 1900-1959, during which period no other data are available.[3] The Bank Markazi Iran estimates for 1960-1965 are added to complete the 65-year series given in Table 9-2.

Two related reasons may be given for the constancy of the ratio between expenditures on residential and non-

residential building. In the first place, it is highly likely that the volume of private non-residential construction moves in step with the volume of house-building; an increase in house-building, which in any case tends to follow a communal rather than an individual pattern,[4] will usually lead to an increase in the number of shops, stores, garages, schools, mosques, restaurants, offices and similar buildings near these houses.[5] A solitary piece of information in support of this assertion is the estimate of one non-residential establishment for every 14 inhabitants of the city of Tehran in 1927 given by a municipal report.[6] Allowing four persons per house,[7] this implies a ratio between non-residential and residential building of 29 per cent, which is very close to the ratio applied.

In the second place, it is likely that the construction costs of non-residential buildings will be in step with the costs of house-building, in that wages, building materials and methods of constructions are likely to be similar,[8] even though internal and external decoration may be different.[9]

The figures in Table 9-2 do not include farm buildings owned by private persons as these have already been implicitly included in the figures for G.D.F.C.F. in rural dwellings.[10] For the most part, these dwellings serve also as stables and stores for Iranian farmers,[11] and separate buildings are not

common.[12] Neither does the table include expenditure on land improvements, which are shown separately in Table 9-3. These are based on estimates of loans made to farmers by the Agricultural Bank as calculated by Adib-Soltani for the years 1937-1959,[13] and by Agricultural Bank reports for the years 1960-1965.[14] There is some evidence that, apart from these loans, private landowners have not spent significant amounts on land improvements,[15] relying, in the main, on the use of a generous fallow-field system to preserve soil fertility and to provide a margin for increased production.[16] It is assumed therefore that aggregate expenditure on land improvements before 1937 was insignificant, and that since 1937 (which is four years after the founding of the Agricultural Bank),[17] such expenditure can be represented in toto by the estimated bank loans. Expenditure on irrigation projects, in particular the construction of 'qanats' - underground water channels[18] - has, however, been included by Adib-Soltani in his loan estimates.[19] And since it is known that private landowners did construct qanats in the years 1900-1936,[20] a figure of 50 per cent of the Agricultural Bank loans in 1937, adjusted by the wholesale price and population indices, is used to estimate annual expenditure on qanats for the 36-year period. (Also in Table 9-3).

The only other type of private non-residential con-

struction to be considered here is industrial building. Surveys by the Ministry of Economy for the years 1963-1965[21] show that expenditure on industrial buildings by the manufacturing sector amounts, in aggregate to 31 per cent of expenditure on new machinery, plant and equipment. It is therefore of considerable significance to this study.

However, it is not possible either to break down G.D.F.C.F. in machinery, etc., into sectors, or to determine the proportion of such machinery employed inside buildings. It has therefore been assumed that private expenditure on industrial buildings is directly related to expenditure on the installation of non-exempt imports of capital goods. The reasoning behind this assumption is that installation of machinery implies, for the most part, installation within buildings;[22] that non-exempt imports are almost exclusively imports by the private sector;[23] and that the higher the installation cost, the more expensive is likely to be the building in which it is installed.[24] Installation expenditures, as given in Tables 6-1 and 6-5, are multiplied by a factor of 1.5, this multiplier being based on data given in a number of independent estimates quoted in Chapter 6.[25] The resultant 65-year series of G.D.F.C.F. in private industrial buildings is given in Table 9-4.

The question arises as to whether there is an element

of double-counting between the estimates of Table 9-4 and Table 9-2. The Bank Markazi Iran survey used for Table 9-2 lists four categories of private buildings: 'Residential', 'Residential with Business', 'Commercial' and 'Other'.[26] It is understood that any industrial buildings would be included in the 'Other' category.[27] However, the expenditure in all urban areas in 1965 for 'Other' construction is only 40 per cent of urban expenditure on industrial buildings for the manufacturing sector alone in the same year.[28] Hence it will be a much lower percentage of all industrial building. Moreover, since the 'Other' category also includes a proportion of non-industrial buildings,[29] it can be seen that the element of double-counting, when it exists, will be small.

Expatriate Oil Industry

The capital accounts of the Iranian Oil Producing Company and the Iranian Oil Refining Company for the years 1954-1965 were obtained from the offices of these companies in Tehran.[30] The annual gross increase in fixed assets shown in these accounts was adjusted to include all expenditure on exploration and drilling (less expenditure on well-head fittings), and to exclude all imported plant, machinery and equipment, already contained in the figures of Chapter 6. Also excluded are expenditures on housing for oil industry employees which are included in the figures of

Chapter 8.

The annual estimates given in Table 9-5 include, therefore, all capital expenditure on production and refinery facilities, pipelines, storage and loading facilities, workshops, stores, offices, utilities and non-basic operations such as educational, health and social services which has not been estimated elsewhere in this study. It must be noted, however, that since the Oil Companies' accounts are made up to the end of December, the time coverage of the annual estimates is slightly different to that of other estimates presented here. No adjustment is made to offset this discrepancy.

During the years 1952-1953 - the period of nationalization of the oil industry - no capital expenditures were made by expatriate oil companies.[31] For the years 1901-1951, one-third of the annual gross increase in fixed assets of the Anglo-Iranian Oil Company is held to represent expenditure on other building and works.[32] The estimates, shown in Table 9-6, are calculated from the annual depreciated totals of fixed assets by assuming that a straight-line depreciation of 10 per cent has been used in addition to stated amounts of extra depreciation. It has not been possible to determine the actual methods of depreciation used by A.I.O.C. The ratio of one-third is the same as that used, and explained, in Appendix F.

An insignificant element of double-counting between the figures of Table 9-6 and those of Table 8-7 is present due to the fact that expenditure on 11,093 houses built by the A.I.O.C. between 1901 and 1950 is included in both tables.[33]

The capital accounts of other expatriate oil concessionaires are omitted as the activities of these companies are almost exclusively confined to drilling and production in the Persian Gulf and not on land.

Public Sector Building and Works

Annual expenditure on other building and works by the public sector are built up from separate estimates for the Plan Organization, Government Ministries, Municipalities, and other Government enterprises and institutions. In each component is included an unknown proportion of military expenditure, for which no adjustment can be made.

The Plan Organization, founded in 1948,[34] has produced regular financial reports since 1962,[35] while irregular reports were issued before that date.[36] Although details of expenditure on all projects are given, the reports are not drawn up in such a way as to make possible a separation between capital and current expenditures. It is not therefore possible to discover directly how much of the expenditure on each project was for non-residential building and works.

The basic division of Plan Organization expenditures is between 'development' and 'non-development' expenditure.[37] To obtain construction expenditures from development expenditures, the following items must be subtracted:

a. Non-capital expenditures such as loans to the private sector, and a certain amount of current, or recurrent, expenditure.
b. Expenditure on increases in inventories.
cc. Expenditure on plant, machinery and equipment already included in Chapters 6 and 7.
d. Expenditure on construction machinery.

An unofficial survey of about 65 per cent of Plan Organization projects during the years 1963-1965 estimated that, on average, 78 per cent of Plan Organization development expenditure was on fixed assets, with 86 per cent of this amount being on construction and works and 14 per cent on plant, machinery and equipment.[38] The survey made no allowance for the machinery component of expenditure on construction and works, which is estimated here as 10 per cent. This 10 per cent is arrived at by weighting the average machinery component of building expenditure (5 per cent)[39] and the average machinery component of road-construction expenditure (24 per cent)[40] in the ratio 3:1 - the approximate ratio of the two types of projects in the first three National Plans.[41] Thus it can be estimated

that 60 per cent of Plan Organization development expenditure was for other construction and works. This percentage is applied to actual development expenditures made in the years 1959-1965, and to estimates of annual development expenditure in the years 1948-1958, for which period only two sets of grouped data exist.[42]

The estimates of annual expenditure on other building and works by the Plan Organization are given in Table 9-7.

Table 9-8 shows annual expenditure on construction by Government Ministries. These estimates have been made directly from the Budget publications of the Ministry of Finance for the years 1958, 1959, 1963 and 1964,[43] and from the unpublished files of the Ministry for the years 1940-1957 and 1960-1961.[44] An estimation of construction expenditure for the years 1924-1939, 1962 and 1965 has been made from the size of the National Budget, while for the period 1900-1923, for which no regular National Budgets were made, a similar process is used on the total of budgets of various ministries.

It must be stressed that, even if the Budget estimates are complete and accurate, none of them refers to expenditures actually made, but only to forecasted expenditures.[45] Although it has been pointed out by Iranian observers that ministries rarely fail to spend their budgets,[46] it is nevertheless impossible to determine whether allocations

for construction really have been used for that purpose. Moreover, many of the ministries have 'special accounts' in which no details at all are given, and for which, therefore, it is impossible to guess at construction allowances.[47] It is likely that such allocations from these 'special accounts' are small for the simple reason that 'secret' expenditures are unlikely to manifest themselves in conspicuous construction work. However, an important exception to this generalization is the financing of road and rail construction in the 1930s from special accounts,[48] and this is estimated separately in Table 9-9.

For construction expenditure in the years 1940-1957 and 1960-1961 access was obtained to the internal unclosed files of the Ministry of Finance. These files are unclosed because the accounts they contain are, in varying degrees, incomplete. However, it was discovered that the omissions were of little relevance to total construction expenditure as they represented missing accounts of a number of minor or far-flung offices.[49] The data on construction expenditure in the accounts have therefore been assumed complete. In each annual file the expenditure on construction by individual ministries and associated offices was totalled, the relevant totals being given in Table 9-8.

There are estimates of the size of every National Budget from 1924[50] (this being the year of the first

regular National Budget, though one previous Budget had been produced in 1910).[51] In addition, estimates are available of the aggregate budget of all ministries for the years 1900-1923.[52] One per cent of annual Budget expenditure is taken to represent expenditure on construction for the years 1900-1939, this being the mean percentage calculated for the years 1940-1951, and the results are given in Table 9-8.

Although a central co-ordinating office for the large number of municipalities in Iran (over 430 in 1963)[53] has recently been instituted, there apparently exists no centralized accounts for these municipalities.[54] Moreover, attempts to obtain accounts directly from four municipalities failed completely.[55] The Bank Markazi Iran estimates of municipality expenditure on construction make the assumption that such expenditure is a direct function of municipal income. All municipalities are grouped into four income strata, and the proportion of income in each stratum spent on construction is estimated from a sample of 32 municipalities grouped in the same way.[56] The Bank Markazi Iran estimates for the years 1959-1965[57] are accepted and are shown in Table 9-10.

There are no data before 1959 for any municipality. However, between 1959 and 1962 construction expenditure by Government Ministries and by Municipalities was approxi-

mately the same.[58] In the absence of evidence to the contrary, it can be assumed that this relationship also held for the years 1900-1958. One minor piece of information supporting this assumption is that the 1948 construction expenditures by 9 municipalities[59] bears the same relationship to Ministry construction expenditure in that year as the population of the 9 towns to total urban population in 1948.[60] (The ratio is 1:3.2). This evidence is significant if it is accepted that municipal construction expenditure is related to the size of the urban population. Estimated annual expenditure on construction by municipalities is also shown in Table 9-10.

Since the mid-1950s a large number of government enterprises and non-profit-making institutions have come into existence,[61] the largest of which is the National Iranian Oil Company. Expenditure on other building and works by these organizations is calculated

a. Directly from the annual unpublished accounts of the National Iranian Oil Company for the years 1955-1965, obtained from the company offices in Tehran.[62] The estimates are given in Table 9-11.

b. Published data on construction expenditure for all other organizations for the years 1964-1965,[63] given in Table 9-12.

c. Indirectly from the adjusted results of a Bank

Markazi Iran questionnaire for 1959-1963,[64] also given in Table 9-12.

d. From the assumption that expenditure in 1955-1958 by organizations other than the N.I.O.C. was 7 per cent of total expenditure including that of the N.I.O.C. (a proportion which applies for the years 1959-1960). (See Table 9-12.)

e. From the assumption that expenditure before 1955 by these organizations was insignificant.[65]

The estimates of expenditure on road, rail and port construction not elsewhere included in the estimates of this chapter are given in Table 9-9. They are made from a variety of sources which give approximate total costs.[66] These costs have been adjusted to avoid double-counting of the machinery component by use of an independent estimate of this component in the case of roads and ports,[67] and by selective use of data of imports of railway machinery from the raw figures used in Chapter 6.[68] Costs of extending and renovating the rail system and road network for military purposes by the Allies in the Second World War are not included.[69] Indeed it is generally considered that such expenditure had little post-war benefit to the transportation network of the country.[70]

The figures given in the first 12 Tables of this chapter are brought together in aggregate form in Table

9-13. It is clear that the reliability of these estimates (discussed fully in Chapter 10) is low. However, the general trend and order of magnitude of the estimates do give some idea of the relationship between expenditure on other building and works and overall G.D.F.C.F.

Table 9-1: Mean Proportion of Private Urban Construction Expenditure, 1959-1965, by Residential and Non-Residential Components. (in percentage form).

Coverage	1.Total Expend.	2.Resident. Expend.	3.Non-Resid. Expend.	3/2 x 1
All urban areas	100.0	78.7	21.3	27.1
Tehran	100.0	80.0	20.0	25.0
9 large cities	100.0	75.8	24.2	31.9
Small urban areas	100.0	78.8	21.2	26.9

Source: Bank Markazi Iran, 'Bulletin', No.26, No.28, and No.33.

Notes: The residential component consists on 100% of 'Residential' building and 50% of 'Residential with Business' building as given in the source.

Table 9-2: Private Non-Residential Building Expenditure, 1900-1965

(millions of rials)

Year	1965 Prices	Current Prices	Year	1965 Prices	Current Prices
1900	632.0	38.0	1934	462.0	34.0
1901	632.0	38.0	1935	492.0	41.0
1902	608.0	36.0	1936	807.0	75.0
1903	632.0	38.0	1937	799.0	90.0
1904	629.0	38.0	1938	810.0	93.0
1905	632.0	38.0	1939	832.0	110.0
1906	629.0	38.0	1940	821.0	120.0
1907	632.0	38.0	1941	977.0	202.0
1908	632.0	38.0	1942	991.0	396.0
1909	629.0	38.0	1943	1004.0	603.0
1910	643.0	39.0	1944	1029.0	637.0
1911	618.0	37.0	1945	1029.0	611.0
1912	643.0	39.0	1946	2749.0	1598.0
1913	643.0	39.0	1947	2638.0	1549.0
1914	629.0	36.0	1948	2716.0	1798.0
1915	643.0	40.0	1949	2851.0	1783.0
1916	643.0	42.0	1950	2851.0	1581.0
1917	653.0	46.0	1951	2943.0	1651.0
1918	643.0	45.0	1952	2932.0	1664.0
1919	629.0	43.0	1953	3078.0	2083.0
1920	664.0	40.0	1954	3156.0	2711.0
1921	643.0	37.0	1955	3159.0	2782.0
1922	653.0	42.0	1956	3305.0	3136.0
1923	653.0	39.0	1957	3645.0	3540.0
1924	653.0	42.0	1958	3791.0	3773.0
1925	653.0	42.0	1959	3915.0	4092.0
1926	599.0	39.0	1960	3518.0	3566.0
1927	667.0	40.0	1961	3088.0	3686.0
1928	462.0	26.0	1962	4105.0	4660.0
1929	462.0	28.0	1963	2923.0	3405.0
1930	462.0	29.0	1964	2793.0	3085.0
1931	462.0	29.0	1965	3406.0	3406.0
1932	462.0	30.0			
1933	462.0	31.0			

Sources: Figures for 1900-1959 based on Table 8-7. Figures for 1960-1965 based on Table 8-3 and Bank Markazi Iran, 'Bulletin', Nos. 26, 28 & 33.

Notes: The Bank Markazi Iran figures for urban areas 1960-1965 are revised upwards by 10% of the expenditure in smaller urban areas to account for new urban areas.

Table 9-3: Expenditure on Land Improvements and Qanats. 1900-1965

(millions of rials)

Year	Current Prices	Year	Current Prices
1900	3.1 *	1934	3.1 *
1901	3.1 *	1935	3.1 *
1902	3.1 *	1936	3.1 *
1903	3.1 *	1937	6.3
1904	3.1 *	1938	18.7
1905	3.1 *	1939	33.5
1906	3.1 *	1940	57.3
1907	3.1 *	1941	45.7
1908	3.1 *	1942	93.8
1909	3.1 *	1943	133.6
1910	3.1 *	1944	148.7
1911	3.1 *	1945	126.5
1912	3.1 *	1946	102.6
1913	3.1 *	1947	151.7
1914	3.1 *	1948	165.7
1915	3.1 *	1949	180.9
1916	3.1 *	1950	197.6
1917	3.1 *	1951	215.7
1918	3.1 *	1952	235.6
1919	3.1 *	1953	257.8
1920	3.1 *	1954	362.3
1921	3.1 *	1955	244.5
1922	3.1 *	1956	522.6
1923	3.1 *	1957	511.4
1924	3.1 *	1958	920.1
1925	3.1 *	1959	1100.5
1926	3.1 *	1960	833.4
1927	3.1 *	1961	398.6 *
1928	3.1 *	1962	495.9
1929	3.1 *	1963	474.0
1930	3.1 *	1964	502.5
1931	3.1 *	1965	1557.1
1932	3.1 *		
1933	3.1 *		

Sources: 1937-1959: Adib-Soltani, S., op. cit., pp.4-8
1960-1965: Annual Reports of Agricultural Bank.

Notes: * Estimate.

Table 9-4: Expenditure on Private Industrial Buildings, 1900-1965.

(millions of rials)

Year	Current Prices	Year	Current Prices
1900	-	1934	33.6
1901	-	1935	46.5
1902	-	1936	44.7
1903	-	1937	49.0
1904	-	1938	44.5
1905	-	1939	19.6
1906	-	1940	20.2
1907	-	1941	35.2
1908	-	1942	6.0
1909	-	1943	2.7
1910	-	1944	6.4
1911	-	1945	10.7
1912	-	1946	38.7
1913	-	1947	64.3
1914	-	1948	61.6
1915	-	1949	140.7
1916	-	1950	243.0
1917	-	1951	261.4
1918	-	1952	294.6
1919	-	1953	409.5
1920	1.8	1954	489.4
1921	1.8	1955	719.7
1922	1.5	1956	708.3
1923	2.4	1957	966.3
1924	4.2	1958	1745.2
1925	4.2	1959	2937.1
1926	7.0	1960	3474.6
1927	11.8	1961	2581.3
1928	13.0	1962	2770.0
1929	33.3	1963	2258.2
1930	38.6	1964	2979.6
1931	12.9	1965	2419.3
1932	19.4		
1933	56.1		

Source: Tables 6-1 and 6-5.
Methods of calculation given in text.

Table 9-5: G.D.F.C.F. by the Iranian Oil Operating Companies, 1954-1965.

(millions of rials)

Year	Current Prices
1954	172.5
1955	172.5
1956	997.5
1957	2310.0
1958	3397.5
1959	2902.5
1960	2565.0
1961	4035.0
1962	4485.0
1963	3832.5
1964	2520.0
1965	2962.5

Source: Annual Accounts of the two Oil Operating Companies.

Notes: The figures exclude items such as imports of machinery and house construction which are included in other tables of this study.

Table 9-6: Other Building and Works of the Anglo-Iranian Oil Company, 1901-1951.

(millions of rials)

Year	Current Prices	Year	Current Prices
1901	3.0	1927	10.9
1902	3.3	1928	1.6 *
1903	3.2	1929	6.0
1904	3.5	1930	42.6
1905	3.5	1931	0.2
1906	3.1	1932	-
1907	2.9	1933	-
1908	3.0	1934	11.5
1909	3.3	1935	31.6
1910	3.6	1936	19.1
1911	3.4	1937	37.6
1912	2.8	1938	91.1
1913	5.7	1939	61.0
1914	8.9	1940	11.7
1915	5.1	1941	9.2
1916	4.3	1942	76.7
1917	2.0	1943	84.2
1918	1.7	1944	98.8
1919	12.1	1945	172.8
1920	21.3	1946	28.5
1921	26.4	1947	104.5
1922	33.7	1948	670.4
1923	15.1	1949	948.7
1924	11.0	1950	346.6
1925	0.2	1951	552.2
1926	-		

Source: Annual Accounts of the A.I.O.C.

Notes: * 9 months only due to a change in the date accounts were made up to.
Methods of estimation given in Appendix F.

Table 9-7: Expenditure on Other Building and Works by The Plan Organization, 1948-1965

(millions of rials)

Year	Current Prices
1948	351.4
1949	351.4
1950	351.4
1951	351.4
1952	351.4
1953	351.4
1954	351.4
1955	2776.2
1956	5553.4
1957	5553.4
1958	5830.0
1959	7074.0
1960	7504.8
1961	7693.2
1962	7989.0
1963	11280.0
1964	16620.0
1965	21120.0

Sources: Plan Organization accounts.

Notes: Years 1948-1954 based on overall development expenditure in the period. Similarly for years 1955-1957.

Table 9-8: Expenditure on Buildings by Government Ministries, 1900-1965.

(millions of rials)

Year	Current Prices	Year	Current Prices
1900	0.8	1934	6.2
1901	0.8	1935	7.5
1902	0.8	1936	10.0
1903	0.8	1937	12.5
1904	0.8	1938	15.3
1905	0.8	1939	19.3
1906	0.8	1940	31.4
1907	0.8	1941	4.3
1908	0.8	1942	60.7
1909	0.8	1943	61.0
1910	1.2	1944	20.7
1911	1.2	1945	24.1
1912	1.2	1946	70.4
1913	1.2	1947	190.6
1914	1.2	1948	173.7
1915	1.2	1949	107.3
1916	1.2	1950	126.8
1917	1.2	1951	78.1
1918	1.2	1952	18.1
1919	1.2	1953	55.4
1920	1.2	1954	53.9
1921	2.0	1955	79.2
1922	2.6	1956	64.7
1923	2.0	1957	287.5
1924	2.4	1958	246.0
1925	2.5	1959	1415.0 *
1926	2.0	1960	1030.5 *
1927	2.1	1961	128.1
1928	2.8	1962	1069.0*
1929	3.5	1963	216.3
1930	3.5	1964	38.0
1931	3.7	1965	149.0
1932	4.8		
1933	5.1		

Sources: As given in text.

Notes: * includes expenditure on road construction.

Table 9-9: Expenditure on Road, Rail and Port Facilities Not Elsewhere Included in This Study.

(millions of rials)

Year	Road	Rail & Ports	Year	Road	Rail & Ports
1900			1934	55.0	112.0
1901			1935	55.0	174.0
1902			1936	70.0	115.4
1903			1937	70.0	160.0
1904			1938	70.0	100.0
1905			1939	70.0	53.0
1906	Insignificant		1940		
1907			1941		
1908			1942	War	
1909			1943		
1910			1944		
1911			1945		
1912			1946		
1913			1947	-	-
1914			1948	a	a
1915			1949	a	a
1916	War		1950	a	a
1917			1951	a	a
1918			1952	a	a
1919			1953	a	a
1920			1954	a	a
1921	Insignificant		1955	600.0	a
1922			1956	600.0	a
1923			1957	700.0	a
1924			1958	700.0	a
1925	10.0	Insignificant	1959	b	a
1926	10.0	Insignificant	1960	b	a
1927	10.0	Insignificant	1961	b	a
1928	20.0	30.0	1962	b	a
1929	20.0	38.0	1963	b	a
1930	20.0	42.0	1964	b	a
1931	30.0	35.0	1965	b	a
1932	30.0	28.0			
1933	30.0	100.0			

Sources: As quoted in text and notes.

Notes: a. Expenditure included in Table 9-7.
b. Expenditure included in Table 9-7 or 9-8.

Table 9-10: Expenditure on Buildings by Government Municipalities, 1900-1965.

(millions of rials)

Year	Current Prices	Year	Current Prices
1900	0.8	1934	6.2
1901	0.8	1935	7.5
1902	0.8	1936	10.0
1903	0.8	1937	12.5
1904	0.8	1938	15.3
1905	0.8	1939	19.3
1906	0.8	1940	31.4
1907	0.8	1941	4.3
1908	0.8	1942	60.7
1909	0.8	1943	61.0
1910	1.2	1944	20.7
1911	1.2	1945	24.1
1912	1.2	1946	70.4
1913	1.2	1947	190.6
1914	1.2	1948	173.7
1915	1.2	1949	107.3
1916	1.2	1950	126.8
1917	1.2	1951	78.1
1918	1.2	1952	18.1
1919	1.2	1953	55.4
1920	1.2	1954	53.9
1921	2.0	1955	679.2
1922	2.6	1956	664.7
1923	2.0	1957	987.5
1924	2.4	1958	946.0
1925	2.5	1959	1181.0
1926	2.0	1960	1272.0
1927	2.1	1961	1409.0
1928	2.8	1962	1396.0
1929	3.5	1963	1409.0
1930	3.5	1964	1302.0
1931	3.7	1965	1336.0
1932	4.8		
1933	5.1		

Source: Tables, 9-8, 9-9, and Bank Markazi Iran data obtained privately and given in 'Provisional Estimates of National Income of Iran, 1959-1963', Tehran, 1966.

Notes: Figures for years before 1955 refer to Table 9-8 only.

Table 9-11: Expenditure on Other Building and Works by the National Iranian Oil Company, 1955-1965.

(millions of rials)

Year	Current Prices
1955	1259.6
1956	1328.6
1957	882.2
1958	936.8
1959	1472.3
1960	1925.7
1961	1232.7
1962	421.5
1963	833.8
1964	972.7
1965	4324.0

Source: Annual Balance Sheet of N.I.O.C.

Table 9-12: Expenditure on Other Building and Works by Other Government Establishments, 1955-1965.

(millions of rials)

Year	Current Prices
1955	100.0
1956	58.0
1957	73.0
1958	191.0
1959	170.0
1960	99.0
1961	1221.0
1962	1093.0
1963	412.0
1964	692.2
1965	576.1

Sources: As given in text.

Table 9-13: Expenditure on Other Building and Works 1900-1965. Current Market Prices.

(million rials)

Year	Total	Year	Total
1900	42.7	1933	230.4
1901	45.7	1934	261.6
1902	44.0	1935	366.2
1903	45.9	1936	347.3
1904	46.2	1937	437.9
1905	46.2	1938	447.9
1906	45.8	1939	385.7
1907	45.6	1940	272.0
1908	45.7	1941	300.7
1909	46.0	1942	693.9
1910	48.1	1943	945.5
1911	45.9	1944	932.3
1912	47.3	1945	969.2
1913	50.2	1946	1908.6
1914	50.4	1947	2250.7
1915	50.6	1948	3394.5
1916	51.8	1949	3619.3
1917	53.5	1950	2973.2
1918	52.2	1951	3187.9
1919	60.6	1952	2581.8
1920	68.6	1953	3212.5
1921	72.3	1954	4194.4
1922	85.5	1955	9412.9
1923	63.6	1956	13633.8
1924	65.1	1957	15811.3
1925	64.5	1958	18685.6
1926	63.1	1959	22344.5
1927	80.0	1960	22271.0
1928	99.3	1961	22384.9
1929	135.4	1962	24379.4
1930	204.3	1963	20288.3
1931	117.6	1964	28712.0
1932	120.1	1965	37850.0

Sources: Tables 9-2 to 9-12.

Notes

1. Bank Markazi Iran, 'Bulletin', Vol.5, No.26, July-August 1966, pp.206-232; continued in later volumes.

2. Ibid., Table II - 'Cost of Construction of Privately-Owned Structures, by Year Completed and Primary Use'.

3. Simonet, P.A., 'Rapport sur les Statistiques Economiques et Sociales de l'Iran', Tehran, unpublished, 1960, p.6.

4. For an analysis of the communal pattern of villages see Behnam, D.A., 'Consequences Economiques de la Croissance Demographique dans les Pays Insuffisamment Developpes d'Apres l'Exemple de l'Iran', Paris University thesis, 1959, p.38.

5. An assertion supported by my own observations in Iran.

6. Tehran Municipality, 'Second Yearbook of Statistics of Tehran City, 1925-1929', (persian), Tehran, 1931, pp.70-90.

7. See Chapter 8, above.

8. Assertion supported by my own observations in Iran.

9. Assertion supported by my own observations in Iran.

10. See Chapter 8, above.

11. Djamalzadeh, M.A., 'An Outline of the Social and Economic Structure of Iran', Part 1, in International Labor Review, Vol. LXIII, No.1, January 1957, p.33.

12. Overseas Consultants Inc., 'Report on Seven Year Development Plan for the Plan Organization of the Imperial Government of Iran', Vol.2, New York, 1949, p.14.

13. Adib-Soltani, S., 'Private Fixed Investments in Iran, 1937-1959', Tehran, unpublished, 1961, pp.7-9.

14. The Agricultural Bank of Iran (The Agricultural Credits and Rural Development Bank of Iran), 'Annual Report', Tehran, various years from 1960.

15. See, for example, Khatibi, N., 'An Analysis of Iranian

Agricultural Production, 1960-1966', in 'CENTO Conference on National and Regional Agricultural Development Policy', Istanbul, 1967, pp.69-70.

16. Baldwin, G.B., 'Planning and Development in Iran', Baltimore, 1967, p.73.

17. Bank Markazi Iran, 'Investors' Guide to Iran', Tehran, 1966, p.139.

18. For a good description of qanats see English, P.W., 'City and Village in Iran', University of Wisconsin, 1966, pp.135-140.

19. Adib-Soltani, S., op. cit., p.8.

20. This follows from the increase in the number of Iranian villages during this period, the fact that new villages, especially those on the central plateau, depend on qanats for water supplies, and the fact that the bulk of the fertile land in the country was in the hands of the large landowners. On this last point see Lambton, A.K.S., 'Landlord and Peasant in Persia', Oxford, 1953, p.274.

21. Iran, Ministry of Economy, 'Report on the Results of the Annual Industrial Survey in 1963 ... 1964 ... 1965', Tehran, Table 4, - 'Changes in Fixed Assets in Industrial Establishments'.

22. An exception is pump installation, but it is likely that civil works are involved in this type of installation (shelters, etc.).

23. See Chapter 6, above.

24. Installation expenditures are based on the 'heaviness' of the capital good. See Chapter 6, above. And it is likely that 'heavier' goods require larger buildings.

25. See footnotes 91, 92, 93 to Chapter 6.

26. Bank Markazi Iran, 'Bulletin', op. cit., p.215.

27. Information obtained privately from enumerators in the Statistics Department of Bank Markazi Iran.

28. Comparison of data in Bank Markazi Iran, 'Bulletin',

No.33, p.369 with data in Ministry of Economy, op. cit., for 1965, p.III and p.4.

29. Information obtained privately from enumerators in the Statistics Department of Bank Markazi Iran.

30. Iranian Oil Operating Companies, 'Management Statistics', unpublished and confidential, Tehran, 1966. Also Annual Accounts of the Iranian Oil Producing Company and the Iranian Oil Refining Company, 1954-1965.

31. The Anglo-Iranian Oil Company left Iran in 1951 and the Oil Operating Companies were formed in 1954. See Frye, R.N., 'Iran', London, 1960, pp.95-100.

32. See Appendix F.

33. Housing data from International Labor Office, 'Labor Conditions in the Oil Industry in Iran', Geneva, 1950, p.33.

34. A good description of the founding of the Plan Organization can be found in Baldwin, G.B., op. cit., Chapter II.

35. Iran, Plan Organization, Financial Affairs Department, 'Report', (persian), unpublished, issued twice a year from March 1963.

36. For example, Iran, Plan Organization, Budget Bureau, 'Status Summary of Previous Payments ....', Tehran, 1960, unpublished.

37. Iran, Plan Organization, Planning Division, 'Outline of the Third Plan', Tehran, 1965, pp.III/IV.

38. Results of survey obtained privately from M. Tajdar, Head of the National Income Department, Bank Markazi Iran.

39. Data obtained privately from two 'me-mars' (unqualified but highly-experienced architects) working in Meykadeh Road, Tehran, in the months of April and May 1967.

40. Laubert, R., 'Draft Final Report on Road Engineering and Construction', Tehran, unpublished, 1962, Annexe B.

41. Iran, Plan Organization, Planning Division, op. cit., p.72; And Iran, Plan Organization, Economic Bureau, 'Review of the Second Seven Year Plan Program of Iran', Tehran, 1960, pp.4-8.

42. Iran, Plan Organization, Budget Bureau, op. cit; And Motamen, H., 'Development Planning in Iran', in Middle East Economic Papers, Beirut, 1956, p.105.

43. Iran, Ministry of Finance, 'National Budget Bill', (persian), Tehran, 1958, 1959, 1963, 1964.

44. Iran, Ministry of Finance. Unclosed files in the 'Da'ereh Tafriq-e-Boodgeh'.

45. One exception is for 1928. See League of Nations, Economic Intelligence Service, 'Public Finance 1928-1937', Vol.LVII, Iran, Geneva, 1938, p.2.

46. The private opinions of two officials in the Budget Bureau of the Ministry of Finance, July 17, 1967.

47. See examples in Iran, Ministry of Finance, op. cit.

48. League of Nations, Economic Intelligence Service, op. cit., p.2.

49. The omissions were indicated by blank columns in the detailed accounts of each Ministry for Tehran and the provinces.

50. League of Nations, Economic Intelligence Service, op. cit., p.2; Farmanfarma, A., 'Budgetary Administration and Procedure in Iran', University of Southern California thesis, 1958, unpublished, p.74; Certeux, J., 'La Fiscalite et Les Finances Iraniennes', New York, 1951, unpublished, pp.21-24; Gutt, C., 'Report of the Gutt Mission to Iran', Tehran, 1953, unpublished and restricted, p.8; Monthly and Annual Reports of Bank Melli Iran and Bank Markazi Iran.

51. A description of this is found in Shuster, W.M., 'The Strangling of Persia', London, 1912, pp.77 ff.

52. Yaganegi, E.B., 'Recent Financial and Monetary History of Persia', New York, 1934, p.14, and p.42.

53. Information from the Office of Municipalities in Tehran.

54. Bank Markazi Iran, Economic Research Department, 'Provisional Estimates of National Income of Iran, 1959-1963', Tehran, 1966, p.12. Confirmed by the Office of Municipalities.

55. The Tehran Municipality was approached directly, while three other municipalities were approached through officials in these municipalities. In no case was a single piece of relevant information obtained.

56. Information privately obtained from the National Income Bureau of the Bank Markazi Iran.

57. Bank Markazi Iran, Economic Research Department, op. cit., p.18; continued to 1965 by data sent privately by Homayoon, B., Assistant Director of the Economic Research Department, letter of December 26, 1967.

58. Ibid., p.18.

59. Overseas Consultants Inc., op. cit., Vol.3, p.225.

60. Urban population of 1948 taken from Table 8-1; Population of 9 cities from urban census of 1940-1 adjusted by an annual 2 per cent growth rate between 1940-1948.

61. A list of these can be found in Iran, Plan Organization, Central Budget Bureau, 'Budget of Government Profit-Making and Non-Profit-Making Institutions', Tehran, 1967, pp.1-18.

62. National Iranian Oil Company, 'Balance Sheet', Tehran, unpublished, annually from 1955.

63. Iran, Plan Organization, Central Budget Bureau, op. cit., for 1964 and 1965.

64. Bank Markazi Iran, Economic Research Department, op. cit., p.18.

65. Information of the dates of establishment of a large number of Government Establishments was obtained from an official of the Plan Organization Central Budget Bureau, and it transpires that almost all such Establishments have been founded since 1955. Before that date it is thought that Government Establishments are included in the National Budget.

66. Yaganegi, E.B., op. cit., p.10; Elwell-Sutton, L.P., 'Modern Iran', London, 1941, pp.93 ff; Agah, M., 'Some Aspects of Economic Development of Modern Iran', Oxford University thesis, unpublished, 1958, p.30; Iran, Ministry of Roads, 'Facts and Figures', Tehran, 1964, p.12; Iran, Ministry of Roads, 'Railways Board Annual Statistics, 1940', (persian), Tehran, 1941, p.72; Also data obtained privately from Statistics Department of Iranian Ministry of Roads.

67. Laubert, R., op. cit., Annexe B.

68. Data chosen by tariff numbers of railway equipment.

69. A full account of the rail and road construction during the Second World War can be found in Vail Motter, T.H., 'The Persian Corridor and Aid to Russia', Washington, 1952.

70. Agah, M., op. cit., p.15; International Engineering Company Inc., 'Report on Program for the Development of Iran', San Francisco, 1947, p.33.

CHAPTER TEN

THE MARGIN OF ERROR

The margin of error in the estimates of G.D.F.C.F. for the period 1900-1965 is discussed in this chapter in terms of the constituent elements of the annual totals. It is not possible to estimate degrees of reliability in an objective or scientific manner; all such estimates are therefore subjective. The various statistics used, and the adjustments made to these statistics, are discussed separately. The following reliability categories are used:

Category	Description	Estimated Margin of Error
A	Very Good	± 5 %
B	Good	± 10 %
C	Fair	± 20 %
D	Poor	± 30 %
E	Very Poor	± 40 %

Trade Statistics

Net imports of capital goods are estimated from the Iranian Trade Statistics which give the volume and value of all merchandise passing across the borders of the country at official crossing points. Since the land and sea boundary of Iran is about 6000 km.[1] an immediate question arises as to the extent of commodity movement across unofficial crossing points (smuggling). From the earliest years of the 20th century the inadequacy of trade data due to smuggling has been recognised by the authorities.[2] However, the major items involved are tea, sugar, tobacco, haberdashery and other, readily saleable consumer

goods. No case has come to light of capital goods being smuggled into or out of Iran. Indeed, for items other than light hand-tools or small appliances the physical difficulties of transport across rugged boundary areas suggests that such traffic is insignificant. Thus it can be stated as a generality that no smuggling of capital goods occurs in Iran.[3]

The main point of interest in discussing the reliability of the trade statistics is, therefore, the accuracy of the published reports. Errors in these reports may occur in the collection of import declaration forms; in their collation and publication; or in the declaration forms themselves.

It has been ascertained that there is no check on whether declaration forms are mislaid between border posts and the central sorting office.[4] This extraordinary bureaucratic lapse means that the trade statistics for any year may be seriously deficient. However, since it is not possible to determine whether in fact declaration forms do disappear, it can only be assumed that they do not.

Three consistency checks have been made on the published data. A random sample of potential capital goods was taken from the lists of tariff numbers in Appendix C, and the annual information on these items was examined

a. For discrepancies between the given volume and value totals for each tariff number and the independently calculated sum of the constituent parts (these parts being imports from different countries of origin).

b. For discrepancies between the Persian edition of the trade statistics and the French or English version.

c. For the degree of 'zero preference' in the lists of imports by country of origin.[5]

The full results of these checks are shown in Appendix E. They can be summarized as follows: No errors of addition were found in the annual trade statistics for 1900-1956 and for 1960-1965. However, serious errors were found in the years 1957, 1958 and 1959, thus indicating that compilation in these years was careless and that the degree of reliability of the statistics is lower than in other years. The Persian edition of the trade statistics (for the years in which it has been published[6]) is identical to the French or English version in all but two years (1926 and 1929), and the single error involved in eachcase was minor. Thus it can be stated that estimation of the volume or value of imports from either set of data would produce practically identical results. The third check was of the preference for numbers ending in one or more zeros.

This showed that for the years 1900 to 1959 there has been a distinct zero preference with, on average, 40 per cent of all value figures ending in zero. (The expected percentage is 10 per cent). Zero preference of this nature eliminates a system of rounding, which would be shown by 100 per cent zero preference if figures were rounded to the nearest 10, and suggests that considerable guesswork has been employed in estimation of the figures. This is because the annual totals are composed of a large number of items which would also have to show a large degree of zero preference for the results of the check to apply. It can be concluded therefore that the last three digits of value figures quoted in rials are unreliable and that there may well be an element of arbitrary valuation in other digits. Figures for 1960-1965 are not subject to zero preference.

Declaration forms for imports concentrate on four major pieces of information: a description of the goods imported, the net weight, the number of units involved, and the value of the goods.[7] From these data, and certain subsidiary information on the status of the importer, customs duties, commercial tax and other charges are calculated. There are, therefore, four major places at which errors could occur through wrong declarations. Such wrong declarations may be divided into those which are unintent-

ional and those which are intentional. Included in the former category are cases of misunderstanding of the information required, arbitrary estimation of weight where ad valorem duties are levied, arbitrary weight and value figures for items exempt from duty, and other similar types of error. It is assumed here that unintentional errors in the declaration forms are normally distributed and balance out in both volume and value terms in each year. The intentional errors, are, however, more likely to lead to a bias in the annual data.[8] It has often been suggested, for example, that importers undervalue their merchandise to avoid payment of duties, and this would imply an understatement by the customs authorities of the annual value of goods imported.[9]

Yet there is no evidence to support this assertion. Duties on capital goods have only been predominantly of the ad valorem nature since 1950,[10] and the overall rate has rarely been higher than 15 per cent.[11] In any case, the fact that estimated efficiency of duty collection is less than 100 per cent implies that duty evasion is not necessarily connected with declared values.[12]

Moreover, methods of importation since 1950 have provided a number of automatic checks on both the volume and value of imports. International forwarding agents, who are handling an increasing proportion of imports,

automatically weigh all packages, as do officials in customs.[13] Chambers of Commerce in countries of origin, insurance agents, and two independent sets of Iranian customs valuers scrutinize values. Assuming that the description of goods is accurate, there appears to be little possibility of large numbers of importers producing false declarations.[14] Where inaccurate descriptions are given, the possibility may be greater, but, again, the increasing use of forwarding agents suggests that this activity is becoming rare as the agents protect themselves from liability.[15]

It is difficult to confirm whether intentional errors in declaration forms were similarly small in years before 1960. But conversation with a high official who worked in the Customs Department for 50 years from 1913 suggests that reports of deliberate falsification of declaration forms were grossly exaggerated.[16] In particular, he said that where heavy and conspicuous plant, machinery and equipment is involved the likelihood of false declaration is minimal. This is a view which is supported by personal experience[17] and by remarks of other people connected with the import process.[18]

A point has been made by Hooley[19] that, in times when the domestic currency of a country is overvalued, merchandise imports processed under the official exchange rate are

undervalued in terms of their market values,[20] and thus capital formation estimates are undervalued. But the relevance of Hooley's argument is limited to those final users of capital goods who import them themselves and who buy foreign exchange at free market rates. Expenditure on imports bought with foreign currency obtained at the official rate of exchange is not affected, and this category generally includes all imports through importing agents in Iran. There is no knowledge of the amount of capital goods imports entering Iran through agents, so although an element of understatement may exist it is not possible even to guess at it. The understatement would only apply to years after 1930, when exchange control was introduced.

Taking all the above-mentioned factors into account, the reliability of Iranian trade data as used for estimating G.D.F.C.F. in imported capital goods is subjectively estimated as good (category B). This category applies to the whole of the 65-year period except for the three years 1957-1959, for which period reliability is only fair.

Exemptions, Mark-ups and Charges

The percentages of imported capital goods which are excluded to account for usage by non-producers are based on subjective estimates made between 1964 and 1966. These percentages are assumed to follow the same pattern

throughout the 65-year period and thus the possibility that they may change over time is ignored.[22] However, the fact that the Iranian tariff classification has become more detailed over time facilitates the choice and amount of exclusion percentages in the later years of the study. For the years 1950-1965 it is reasonable to suppose that exclusion percentages fall under reliability category C, with category D applying to years before 1950.

A study of the efficiency of collection of customs duties and other port charges is made in Appendix E and discussed in Chapter 6. It is concluded that, for the latest years of the study, expenditure on customs duties and commercial tax is overstated in reliability category C.[23] This category can be assumed to apply for all years after 1956 when considerable improvements were made to the effectiveness of the customs administration. For all other years reliability is poor, with probable overstatement of up to 30 per cent. However, the overstatement in the years 1928-1936, when a fluctuating customs surcharge was in effect, will be less than in years on either side of this period as the (unknown) surcharge has not been included in the present estimates. This narrowing of the bias towards overstatement will also apply to the years 1952-1955 if duties were collected on basic c.i.f. values rather than on 'surcharged' values.

It is estimated that freight charges fall under reliability category B. There are a number of independent studies on freight rates during the 65-year period and it is assumed that the total weight of imported capital goods is accurately reported.[24] Moreover, the 1000 km. taken as the average distance travelled from port of entry to final destination accords with all reports and studies of the inland pattern of trade and transport. It is also reasonable to assume that this degree of reliability applies throughout the period 1900-1965. For although expatriate oil company imports (which accounted for a large proportion of total capital goods imports in the first 30 years of the century) travelled much shorter distances, this was offset by the longer mileage covered by other capital goods due to the lack of cross-country road and rail systems.[25]

The reliability of distribution mark-ups calculated in this study cannot be graded higher than poor. In Chapter 5 these mark-ups are divided into six components,[26] and it is likely that components a, b, c, d, and f are of good reliability. However, this is outweighed by an almost complete lack of knowledge about the commission or profit taken by importers, or even about the proportion of capital goods imported through distributive agents. The percentage mark-ups employed in this study are con-

siderably higher than those used by the Bank Markazi Iran.[27] They are based on discussions with agents and merchants plus a general impression of how these persons operate. Methods of improving the reliability of distribution mark-ups are discussed in Chapter 4.

The assumptions employed in the estimation of installation expenditures are based on similar estimates in a number of technical studies.[28] They are probably within 20 per cent of the actual amounts spent, given that c.i.f. values are of good reliability. It is assumed that this reliability category applies to the whole 65-year period.

Taking the reliability of all component parts of the estimates of G.D.F.C.F. in imported capital goods into account, it is reasonable to suppose that the reliability of the annual totals is fair for the years 1960-1965, but poor for previous years:

Item	Recent Years	Earlier Years
C.i.f. Values	B	B *
Exclusions	C	D
Customs Duties	C +	D +
Freight Charges	B	B
Distribution	D	D
Installation	C	C
TOTAL	C	D

Whereas the c.i.f. values probably lie within 10 per cent of the actual totals, the lower reliability of the various exclusions, mark-ups and charges brings down the overall reliability of the annual totals of expenditure on

imported capital goods. A small element of compound error, which arises out of the fact that c.i.f. values are marked up by various amounts, themselves dependent on the c.i.f. values, is taken into account in the overall reliability estimates.

Domestically Produced Capital Goods

Capital goods produced domestically are estimated in two components: modern and traditional. Production of modern capital goods is reported by the Ministry of Economy[29] and there is probably an element of understatement in these reports due to incomplete coverage. Indeed, the Bank Markazi Iran marked up the Ministry figures by 20 per cent in 1959 to allow for this undercoverage,[30] and by smaller percentages in the following years on the assumption that the coverage became more complete. From discussions with the Statistics Department in the Ministry of Economy,[31] it is estimated that all totals of modern, indigenous capital goods fall into reliability category C and have a bias towards understatement. There is no evidence that the proportion of undercoverage has declined over time in the manner assumed by Bank Markazi Iran. The percentage mark-up of 20 per cent applied to the ex-factory prices of domestically produced modern capital goods to account for freight, distribution and installation expenses is also thought to lie in reliability category C.

For traditional capital goods it is possible to make an unsubstantiated guess at the probable margin of error. Although it is reasonable to assume that expenditure on traditional capital goods is related to total per capita expenditure and to the general level of prices, it is the assumed proportion of total expenditure spent on capital goods which is most likely to be in error. Consequently it must be assumed that estimates fall into the lowest reliability category, with a margin of error greater than ± 30 per cent.

Since traditional goods represent a greater proportion of indigenous capital goods than modern goods, it can be concluded that the reliability of estimates of G.D.F.C.F. in domestically produced capital goods is very poor.

Residential Housing

The annual estimates of population, on which much of the chapter on G.D.F.C.F. in residential housing is based, are probably within 5 per cent of the actual totals.[32] There is enough supplementary independent information on population to make the 'best estimate' calculated in Appendix A of very good reliability.

However, the manner in which these estimates are utilized and adjusted - by estimates of urban/rural population, the average number of persons per family, the average number of families per house, and the average life-

span of houses - brings the reliability of the final totals down considerably.[33]

The urban/rural breakdown of total population is less reliable than estimates of total population, particularly for the years 1900-1956, when no national censuses were taken. Nevertheless, it can be assumed that the breakdown between 1957-1965, though still not as reliable as figures for total population, is also in category A. But the relationship between housing growth and population growth cannot, as yet, be expressed in a significant regression equation, and so the reliability of the housing estimates must be much lower.

Estimates of the number of persons per family are probably accurate to within 20 per cent for the earlier years of the study, but are of much greater reliability (category A) for the years since the 1956 census. To offset this, however, little is known about the average number of families per house over the 65 year period; and the estimates for 1966 may also be reliable only in category B. The calculated life-span of a traditional house (48 years) is probably of fair reliability in that the actual figure probably lies within about 9 years of this mark.

On the side of costs, it is highly likely that the costs of rural and urban houses of average size are of

very good reliability for the years 1960-1965. For years before 1960, reliability levels depend on the unknown relationship between the existing wholesale price index and the non-existent index of costs of house building. It can only be assumed that the two indices run parallel to each other, there being no evidence to the contrary.[34]

It can be concluded from the above discussion that estimates of G.D.F.C.F. in residential housing fall in category D. However, an exception to this conclusion must be made for the urban housing estimates between 1960-1965, which lie in the top reliability category. This is because they are based on a careful annual survey (described in Chapter 8).[35] The only fault found with this survey was in the historically-determined data for 1959. These are not utilized in this study as they are a clear understatement of the true position, probably due to response errors regarding dates of completion. Because of this exception it can be assumed that the overall estimates for residential housing for 1960-1965 are lifted into reliability category C.

Other Building and Works

In Chapter 9, the only figures, apart from private non-residential construction for the years 1960-1965, which have a probable margin of error of less than 30 per cent are those based on the detailed annual accounts of

the Iranian Oil Operating Companies and the National Iranian Oil Company. These are assumed to fall into category A because they are intended for management use and not for general publication.[36] Moreover, the standard of accounting in these organizations is very high.

In contrast, the accounts of Government Ministries, Municipalities and establishments other than N.I.O.C. are of poor reliability in estimating expenditure on other building and works. For the most part they show budgeted, rather than actual, expenditure and they ignore expenditure from 'special' accounts. In addition, they rarely show a distinction between current and capital expenditures.

The ratios and relationships found, or assumed to exist, for estimation of the remaining data in this section have been substantiated to a small degree in the study, but it is considered that they are of insufficient accuracy to ensure that annual sub-totals are estimated to within less than 20 per cent of the actual figures. Thus it may be concluded that G.D.F.C.F. in other building and works falls into the lowest reliability category (E) for most of the 65-year period, although the estimates from 1960-1965 are probably in category D.

Conclusion

The degree of reliability of the major components of G.D.F.C.F. can be summarized as follows:

Item	1960-1965	1900-1959
Imported Capital Goods	C	D
Domestic Capital Goods	E	E
Residential Housing	C	D
Other Building and Works	D	E
TOTAL (weighted)	D	E

A rough weighting of the component parts suggests that the overall estimates for 1960-1965 are accurate to within 30 per cent, and those for earlier years are of lower accuracy.

Before discussing these results further, it must be stated that estimates in category C can be considered satisfactory for most statistical and economic accounting purposes and that estimates in this category are approaching the maximum possible accuracy for the methods of estimation employed. Consequently, the latest estimates of G.D.F.C.F. in imported capital goods and residential housing, though still capable of improvement, are as good as can be expected. It is the estimates of expenditure on domestically produced capital goods (particularly the traditional type) and on other building and works that bring the overall level of accuracy down. Suggestions as to how these estimates might be improved have been given in detail in Chapter 4. They involve, in summary, the expansion of urban and rural expenditure surveys and the re-classification of government accounts in such a way

as to make clear the division between current and capital expenditures.

For the years before 1959, the reliability of the annual totals is very poor. Nevertheless, the trend of the totals over time, and the changing proportions of the components of these totals provide a useful insight into the progress of the Iranian economy. These have been discussed in full in Chapter 5.

The statistical prowess of Iran has been a subject of derision by almost everyone who has written about the country,[37] Either by examples of published statistical nonsense (often just typographical errors),[38] or by a generalization that 'the statistics are all wrong',[39] an impression has been built up that statistics in Iran are little more than useless. Yet few Iranian statistics, either published or otherwise, have ever been allocated a probable margin of error, even of the subjective type used here.[40] Consequently they are usually judged in terms of 100 per cent accuracy, and, not surprisingly, are found wanting. The attempts made in this chapter to grade the reliability of Iranian statistics are crude and unscientific. Yet they give, for the first time ever, a reasonable indication of the value of many types of Iranian statistics, and show that some, at least, are of a high standard.

Notes

1. Estimated from Iran, Ministry of Roads, 'Highway Map', Tehran, 1966.

2. See the 'General Introduction' section of the Iranian Trade Statistics, 1900-1930. 'Le Tableau général ne comprend que les quantités de numeraire qui ont été déclarées à l'importation et l'exportation. On conçoit que des quantités assez considérables circulent à l'insu de la douane.'

3. Information based on large numbers of press reports in the Tehran daily papers from 1959-1968.

4. Information from a senior official of the Ministry of Finance.

5. A less comprehensive but similar test, producing similar results has been made by Somermeyer, W.H., 'Second (Preliminary) Report on National Income and Related Statistics in Iran', Tehran, 1962, unpublished and restricted, Annexe 12 (ii).

6. The Iranian Trade Statistics have been published in Persian annually since 1927 and Persian editions for 1909 and 1920 also exist.

7. Sample Declaration Form obtained from Customs Department of the Iranian Ministry of Finance.

8. The discussion here owes much to Petruzzelli, N.M., 'Some Technical Aspects of Foreign Trade Statistics with Special Reference to Valuation', Washington, 1946.

9. Wilson, A.T., 'Persia', London, 1932, p.310, for example.

10. International Customs Tariff Bureau, 'Bulletin International des Douanes', Vol. 138, 'Iran'. Various issues.

11. The annual percentages are given in Chapter 5, above.

12. See discussion in Chapter 6, above.

13. Information independently from officials of three international forwarding agents operating in Iran: Schenker and Co., Kuhne and Nagel, and Hirsch Company.

14. Information from officials of the Customs Department in the Ministry of Finance, confirmed by forwarding agents and merchants.

15. Information from forwarding agents. See note 13.

16. Conversation with Ali Jehangir, Ex-Undersecretary of Customs and Monopolies, February 11, 1967.

17. My experience of innumerable border crossings between 1959 and 1967.

18. In particular, two importing agents and one commercial counsellor of an Embassy in Tehran.

19. Hooley, R.W., 'The Measurement of Capital Formation in Underdeveloped Countries', in The Review of Economics and Statistics, July 1967, pp.199 ff.

20. This has been unofficially mooted by Bank Markazi Iran officials as one method of 'exporting capital'.

21. Kianpour, G.R , 'Customs Administration of Iran', Tehran, unpublished, 1965, p.3. (Later published in CENTO Symposium on Tax Administration).

22. See Chapter 6, above.

23. See Chapter 6, above.

24. My experience in Iranian Customs suggests that excessive care is taken with the weight of imports.

25. Information from sources quoted in Chapter 6.

26. See Chapter 6, above.

27. Bank Markazi Iran, 'Provisional Estimates of National Income of Iran', Tehran, 1966, unpublished, pp.14 ff.

28. Quoted in Chapter 6, above.

29. Various reports of Iran, Ministry of Economy, Statistical Bureau.

30. Bank Markazi Iran, op. cit., p.16.

31. Particularly with Eng. A. S. Shaheen and his associates, at various dates in 1966-1967.

32. This subjective estimate was included in the original draft of Bharier, J., 'A Note on the Population of Iran, 1900-1966', in Population Studies, July, 1968.

33. See Chapter 8, above.

34. If the wage index (also non-existent) is closely related to the wholesale price index, then it is likely that the index of costs of house building will also be closely related as the traditional type of Iranian house can be valued in man-hours.

35. Bank Markazi Iran, 'Bulletin', Tehran, Vol.26, continuing.

36. Only brief summaries of the annual accounts are published.

37. See Somermeyer, W.M., op. cit.; Benedick, R.E., 'Industrial Finance in Iran', Boston, 1964, pp.37 ff., etc.

38. Somermeyer, W.M., op. cit.

39. I have heard this phrase innumerable times inside and outside of Iran.

40 Those that have been allocated a margin of error have never had this margin of error publicised.

PART THREE

CHAPTER ELEVEN

SECTORAL ANALYSIS

In this chapter it is argued that meaningful calculation of comprehensive sectoral estimates of capital formation is not feasible for the period 1900-1965. Thus no objective conclusion can be reached on the changing sectoral composition of G.D.F.C.F. over time.

However, the changing pattern of capital formation in individual economic sectors can be studied by combining fragments of relevant quantitative data with a qualitative discussion of sectoral progress. To do this, the Iranian economy is divided into the eleven major sectors recommended by the United Nations International Standard Industrial Classification.[1] Qualitative and quantitative evidence on capital formation in each sector has been gathered from a wide range of sources, many of which are unpublished or generally unobtainable.

The results of this study of sectoral capital formation are then combined with the conclusions of Chapter 5 and used as a basis for a rough subjective evaluation of the sectoral composition of G.D.F.C.F. over time.

* * * *

Sectoral Allocation of G.D.F.C.F.

Any sectoral allocation of aggregate G.D.F.C.F. figures contains arbitrary procedures even when definitions of sectors and capital goods are consistently applied. Typical examples of capital goods for which allocation

between sectors is arbitrary are hotels operated by a railway authority, private cars owned by manufacturing enterprises and tractors used for agricultural draught power, transport and road construction.

The degree of arbitrariness depends on the methods of estimation used for the various components of G.D.F.C.F.[2] In general, where capital formation is estimated by methods other than the direct reception of information from the final users of capital goods, the extent of arbitrary allocation will be greatest. Hooley, for example, considers that where imported capital goods are allocated to final users solely on the basis of the description of the goods, the sectoral results 'may approach the borderline of fancy'.[3]

In Part II of this study, G.D.F.C.F. was, in fact, estimated by a combination of methods, with direct estimation from final users of capital goods utilised in only one small segment of the calculation process, because of the lack of necessary data. Thus it can be concluded that any sectoral allocation procedure will contain a large element of arbitrariness. Indeed, the very fact that a combination of methods was used implies that a different allocation procedure for each method is required. Each of these will possess a different degree of arbitrariness for which summation is impossible. So it is certain

that no standard 'definitional' system of allocation based on either the descriptions of capital goods or their final users can be applied to the G.D.F.C.F. figures of Part II with any degree of reliability.

Some students have allocated G.D.F.C.F. among various sectors by use of ratios, such as the overall sectoral contribution to Gross National Product or to a similar macro-aggregate.[4] But this method, too, is subject to serious criticism, particularly if it is accepted that a margin of error exists in both the aggregate G.D.F.C.F. figure and the ratio used on this aggregate.

Suppose that a sectoral estimate is found by dividing G.D.F.C.F. by a given ratio and that both the divisor and the dividend are subject to an error factor. Then one limiting value of the sectoral result is

$$\frac{X_1 + e\%}{X_2 - f\%}$$

where X_1 = G.D.F.C.F.; X_2 = sector ratio; e% = percentage error in X_1; f% = percentage error in X_2. The other limiting value of the result is

$$\frac{X_1 - e\%}{X_2 + f\%}$$

Where both e and f have the same sign, any error factor in a sectoral divisor will thus result in a greater range of error in the sectoral result than in the aggregate total;

the larger the margin of error in the divisor the greater the range of error of the sectoral estimates. It is, of course, possible that where e and f have different signs the sectoral estimate will have a smaller margin of error than the G.D.F.C.F. aggregate. However there is no way of determining the sign for either error factor, and it certainly cannot be assumed that all sectoral divisors will have the opposite sign to the aggregate.

Before rejecting out of hand sectoral divisors based on sectoral contributions to G.N.P. or other macro-aggregates it must still be shown that they are likely to be subject to an error factor. In fact this is intuitively clear. As long as the technical co-efficients of production and the relative factor prices in each sector are different, then percentage sectoral contributions to G.D.F.C.F. will be different from percentage sectoral contributions to G.N.P. And they will also differ over time in any single sector. Both these assertions are certainly true for the various sectors of the Iranian economy throughout the twentieth century.

In Chapter 10 it was shown that the aggregate G.D.F.C.F. estimates were subject to an error margin of $\pm$ 30 per cent for recent years and $\pm$ 40 per cent for earlier years. When it is considered that sectoral divisors are also subject to a margin of error with an unknown

but probable minimum value of ± 10 per cent for the most recent years it can be seen that use of such ratios would make annual sectoral estimates almost completely unreliable, particularly in the context of a 65-year study.

In addition, it must be remembered that for years before 1957 no estimates of G.N.P. or other maco-aggregate are available. Indeed, one of the contributions of this study is to provide the basis for the construction of such a time-series. And the figures for years after 1957 are mainly based on an expenditure approach in which G.D.F.C.F. is a major component, and one which has already been heavily criticised.[5]

Consequently, both the 'definitional' approach and the utilization of sectoral divisors are here avoided. In their place, a brief but careful survey of capital formation in each sector is made in an attempt, firstly, to trace the time-pattern of capital formation in the eleven sectors and, secondly, to enable an independent, albeit subjective, appraisal to be made of changing sectoral patterns in aggregate G.D.F.C.F.

One final point of explanation remains. Considerable use of the term 'significance in aggregate G.D.F.C.F.' is made in the following pages. Quantitatively this may be taken as a contribution of more than one per cent of G.D.F.C.F.

* * * *

Agriculture, Forestry and Fishing

Agriculture

The four major categories of fixed capital formation in agriculture are[6] -

i Domestically-produced and imported machinery, plant and equipment

ii Farm buildings and other rural construction

iii Irrigation and drainage works

iv Land improvements and additions to the cultivated area.

In addition, the increase in livestock holdings can be regarded as fixed capital formation, although, on United Nations definitions, this is excluded.[7]

i(a) Domestically-produced machinery, plant and equipment: Iranian agriculture is still (1968) in a fairly primitive state.[8] For the most part the same types of indigenous implements are employed today as were used in 1900.[9] Spades, hoes, ploughs, winnowing forks, sickles, and a range of other hand tools, are made by the village blacksmith and the village carpenter, or, in many cases, by bands of itinerant tool-makers.[10] The value of each tool is small, but since agriculture has always employed over 50 per cent of the total population, the aggregate value of such tools is likely to be significantly large. It is likely also that gross fixed capital formation in such tools is

a function of the number of agricultural workers, the wholesale price index and the mean longevity of the tools. Information on the first and third item is practically non-existent.

However, it is probable that capital formation in indigenous agricultural capital goods has been related to capital formation in all domestically-produced machinery, plant and equipment. This has been estimated in Chapter 7. Rough estimates of the proportion of agricultural workers in the population in various years are as follows:

1900	-	90 %	[11]
1930	-	85 %	[12]
1946	-	75 %	[13]
1956	-	65 %	[14]
1965	-	50 %	[15]

If these percentages are applied to the figures for equivalent years in Table 7-3, the trend of capital formation in indigenous agricultural capital goods can be seen to have increased in absolute terms, but to have declined considerably in relation to aggregate G.D.F.C.F. from around 33 per cent to about 6 per cent. This is shown in Table 11-1.

1(b) Imported machinery, plant and equipment: Before 1924 there were no imports of agricultural capital goods except for an unknown, but probably small quantity, by the Anglo-Persian Oil Company.[16]

From the time of the first Millspaugh financial administration in the mid-1920s machinery was imported to be sold to progressive landowners or used on the public domains.[17] However, even up to the mid-1950s modern methods of cultivation involving the use of tractors, etc., were the exception rather than the rule.[18] There is no evidence to suggest that the Agricultural Bank - which started operation in the early 1930s - had any significant effect on imports of mechanised equipment.[19] It is only after 1957, following a new system of Plan Organization credit sales to farmers,[20] that the volume and value of imported tractors and other agricultural machinery showed a significant increase.

This is illustrated in Table 11-2, and Graph 11-1. It is clear from the Table that the weight and value of agricultural equipment follows a similar trend, which, since unit weights of such equipment have changed little over time,[21] implies a degree of constancy in unit values. Although it is generally accepted that little progress was made in mechanising and modernizing agriculture in the 1930s, it is interesting to note from the Table that there was a massive import of agricultural equipment in 1939. This has been traced to imports by the Anglo-Iranian Oil

Company,[23] and it is suggested that these were connected with the fitting out of the Abadan Technical Institute in that year.[24]

ii Farm buildings and other agricultural construction: Almost without exception, Iranian farmers and other agricultural workers use their dwellings as farm buildings.[25] Livestock and tools are housed in one room of the dwellings - in many cases sharing with human beings.[26] Thus capital formation in farm buildings is included in, and inseparable from, capital formation in rural (and some urban) dwellings. Agricultural construction has been insignificant between 1900-1965.[27] It is inseparable from rural construction and works, estimated in Table 9-3.

iii Irrigation and drainage works: Apart from hydro-electric schemes, discussed later in this chapter, there are three major sources of irrigation water in Iran: rivers and springs; underground water channels; and pump-wells. The underground water channels (qanats) have been discussed in numerous articles.[28] They have two main economic features: firstly, they are relatively expensive to construct;[29] secondly, they have a life-span (when maintained in good repair) of 70-100 years for the smaller ones and over 100 years for the larger.[30] Villages which cannot utilize

river, stream or rain water have traditionally been dependent on qanat water. Until the general introduction of pump-wells in the 1950s, when new qanat building fell away,[31] any new village of this type would have required a new qanat. Consequently, capital formation on new qanats is likely to have been related to the increase in the number of qanat-using villages and the mean costs of building qanats. A rough estimate of the number of villages in Iran in 1900 can be made as 30,000.[32] The figure for 1956 is 40,000.[33] Approximately 20 per cent of villages are estimated to be of the qanat-using type.[34] Thus between 1900 and 1956 approximately 10,000 new villages were established, of which 2,000 are estimated to have been qanat-using. As a very rough estimate, it can thus be stated that around 35 qanats were built on average each year between 1900 and 1956.[35] From the figures of Table 9-3 this implies an average cost per qanat of 90,000 rials for the years 1900-1936, which compares reasonably well with estimates made by Noel in 1944.[36] Figures for capital formation in qanats are included in Table 9-3. It is thought that no significant expenditure on drainage works has been made in the period under study.[37]

It is not possible to distinguish pumps imported or produced for agricultural purposes and those used for other purposes.[38] All expenditures on pumps, piping, etc. are included in the figures of Table 6-1, or Table 7-3. It is known, however, that before the mid-1950s water pumps were few and far between.[39] Since the mid-1950s greater utilisation has been made of deep and semi-deep wells,[40] and the aggregate expenditure on these pumps has consequently increased considerably. Indeed, extensive use of deep-well pumps has tended to lower the underground water table thus bringing qanats into early obsolescence,[41] or leading to capital formation in the deepening or extending of qanats.[42]

iv Land improvements and extension of the cultivated area: On the reasonable assumption that per capita consumption has not declined over the period,[43] the fact that the population of Iran has increased by nearly threefold between 1900-1965[44] and that imports of essential foodstuffs have never been significant[45] implies that domestic agricultural production has increased pari passu with population. There is some evidence to show that the average yield per hectare of cropped land has not increased for most crops in most areas of the country.[46] This is in

accordance with the discussion already made on utilisation of machinery, tools and equipment.[47] Furthermore it strengthens the belief that the land tenure system discouraged land improvements before the Land Reform of the 1960s.[48] It is therefore considered that increases in agricultural production have been due mainly to extension of the area under cultivation,[49] or to less utilisation of fallow-field systems.[50] No details of the land area under cultivation are available, as no complete cadastral survey has been made in Iran. It has been necessary to assume, therefore, that all expenditure on land improvement has been financed through the Agricultural Bank (or its predecessors) and this expenditure is included in Table 9-3.

To summarise, therefore, it is probably true to state that fixed capital formation in agriculture played a significant role in aggregate G.D.F.C.F. in the early years of the twentieth century, with indigenous implements and qanat construction accounting for the lion's share of expenditure. From the 1930s to the mid-1950s, however, as capital formation in other sectors increased (particularly in the form of imported capital goods), the relative importance of capital formation in agriculture declined.

Between 1957 and 1965 it is likely that agriculture's

share of G.D.F.C.F. remained constant, with vast increases in imported agricultural machinery enabling capital formation in the agricultural sector to keep pace with the rest of the economy.

A Note on Livestock:

Although net changes in livestock holdings are excluded from the concept of G.D.F.C.F. as defined by the U.N. and in Chapter 2, the few available figures indicate the scale of livestock increases in the period 1931-1965.[51] The figures are illustrated in Graph 11-2, and are given here for use of students who may wish to include expenditures on such changes in livestock holdings in comparative studies of capital formation.

Forestry:

Forestry in the economic sense is only a recent activity in Iran. Glaser has suggested that forestry generally follows the following pattern in developing countries:

a. Clearing of forests for the creation of agricultural lands

b. Exploitation of timber for the growing demands of an increasing population

c. Protection and conservation of the remaining forests

d. Reafforestation of cut strands

e. Utilisation of forests on a long-term planning basis for a sustained yield. Only this activity can properly be regarded as economic forestry.

In 1960, Glaser asserted that Iran was in stage 'c'.[52] An Iranian Forest Service had been created after the Second World War[53] and in 1959 the Forest Law was revised,[54] but it was only after the Forest Nationalisation Law of 1963[55] that a gradual move was made into stages 'd' and 'e'.[56]

Capital formation in forestry consists of the value of increases in the stock of standing timber, expenditure on new plantations and expenditure on plant, machinery and buildings of the Iranian Forestry Department.

The first estimate of the stock of standing forests was made in 1942.[57] It showed the following regional distribution:

Caspian area	3.6	million	hectares
Oak forests; Central and West Iran	10.0	"	"
Junipers, maple; North East Iran	1.3	"	"
Pistachio, almonds; E., S.E. and S. Iran	2.6	"	"
Sub-tropical gulf forests	0.5	"	"
TOTAL	18.0	"	"

These estimates were not based on maps and were subject to a margin of error which was at the time subjectively estimated at ± 10 per cent of the total area.[58] However, only the Caspian forests can presently be regarded as suitable for timber production, and this area has been overcut and overgrazed to such an extent that only about one million hectares of virgin forest remains.[59] There

is also evidence that similar misuse of forest timber took place in the early years of the century.[60] Thus it is certain that there has been no increase in the stock of timber during the period under study. Indeed the substantial decrease which has occurred should technically be regarded as negative capital formation. This is not done because of the general exclusion of stock changes in this study and because of the impossibility of estimating the annual reduction of the standing timber stock, or its value, even on the roughest basis.

There are presently two budgets for forestry. The ordinary budget of the Ministry of Agriculture handles current payments and receipts while the extraordinary budget of the Plan Organization includes all 'capital expenditures'.[61] However, this extraordinary budget also includes such items as the salaries of forest rangers, the expenses of promulgating the Forest Nationalisation Law and current expenditures involved in the finance of capital projects.[62] Thus it is extremely difficult to separate out expenditure on capital formation. All that can be stated here is that well under 3 per cent of the Third Plan funds for agriculture were allocated to forestry projects, representing, in terms of capital goods, about 21 million rials each year from 1962-68.[63] Although this has been the period of greatest activity in forestry, the amount

is insignificant when related to aggregate G.D.F.C.F. in the years 1962-65.

It can be concluded, therefore, that capital formation in forestry has been insignificant for the whole of the period under study.

Fishing

G.D.F.C.F. in fishing consists of gross increases in the value of fishing vessels, fishing tackle, and buildings, jetties, etc., of the fishing industry. No comprehensive figures are available on these items in Iran. The Iranian Foreign Trade Statistics have never distinguished fishing vessels from other types of ships and no separate tariff classification has even been made for fishing tackle. Moreover, scant data are available on quantities of domestically-produced fishing vessels and equipment which are known to exist.

Fishing as an industry exists in two major regions - the Caspian Sea area and the Persian Gulf area. Although traditional stories of fish living in underground irrigation channels have been substantiated, it is thought that these fish were never produced for eating.[64] A survey of the Karaj dam reservoir in 1962 suggested that it could not be utilised for commercial fisheries of any kind,[65] and although a conference on fisheries in 1968 came to the opposite conclusion, it is known that none of

the many existing dam reservoirs is presently used for commercial fish production.[66]

In 1936, a two-year exploratory survey of Persian Gulf fishing was undertaken by a Danish expert, and, as a result, a fish canning plant with a 400 ton capacity was built at Bandar Abbas. It was completed in 1941.[67] One Danish fishing vessel was bought to supplement the local fleet but total production of the cannery had never exceeded 100 tons per season by 1957.[68] Between 1962 and 1965 annual production did not exceed 60 tons[69] so it can be assumed that capital formation in all aspects of this venture has been minimal. The total fish catch is, of course, considerably higher, but is mainly consumed locally by the fishermen, who are often part-time farmers.[70] Four main types of indigenous boats are produced,[71] but a rough estimate of the number and average costs of each type indicates that even if the entire fleet were replaced each year, aggregate G.D.F.C.F. for the economy would not be significantly affected.[72]

The Caspian Fisheries have a longer history. A Government monopoly concession was given to a Russian industrialist in 1876 and this concession was ultimately extended to 1925.[73] Considerable expenditure on capital goods such as warehouses, docks, power plants, etc., was made in the years up to 1916, and it is certain that this

will have figured highly in the G.D.F.C.F. totals for the economy.[74] Between 1917 and 1922 it is thought that little if any addition was made to these capital goods, and that the same position held from 1922-1927, when a Soviet Russian Government concession took over.[75] In 1928, the Caspian fishery operation became a joint-venture by the Iranian and Russian Governments and capital formation again began to increase, with capital goods being imported almost exclusively from Russia in return for fish products.[76] In 1953 the monopoly concession was given to the Iranian Fisheries Company for an unlimited period. This company operates under the control of the Iranian Ministry of Finance.[77]

Some quantitative data are available on the import of 'potential' capital goods by the Iranian Fisheries Company between 1934-1956.[78] These are given in Table 11-3 and show that capital formation has tended to proceed in jerks rather than in any recognisable pattern. The high annual figures are generally representative of purchases of boats or heavy equipment but even these high figures if marked up by the appropriate ratios are insignificant in the context of aggregate G.D.F.C.F. There is no evidence that the level of imports or the pattern changed significantly between 1957-1965.[79]

Thus it can be concluded that although capital form-

ation in fishing played a major role in aggregate G.D.F.C.F. in the years 1900-1916, in no years since 1917 has it been significant.

* * * *

Mining and Quarrying

The lack of importance of non-oil mining and quarrying can be judged from the estimate that it contributed only between 0.2 per cent and 0.3 per cent of G.N.P. by Industrial Origin during the period 1959-1965.[80] And there is evidence to support the view that non-oil mining was even less important in the years 1900-1958.[81]

No authentic records and no systematic and scientific survey has ever been made of the mineral resources of Iran.[82] At the turn of the century only iron and turquoise mines and marble and salt quarries were operated and these were worked in a primitive manner without any great outlay of expenditure on capital goods.[83] And even today (1968) most of the mines, which now produce over 40 types of minerals, are worked on a small scale in the form of strip-mining or tunnelling.[84]

Before 1900, a number of concessions were given to foreign enterprises but no significant advances in capital formation or production were made.[85] Following the Constitution of 1906, minerals became state property, and a temporary mining code was observed by the Ministry of

Public Works, the Ministry of Finance and their successors until 1936, when a Department of Exploration and Exploitation was established.[86] A small amount of machinery was imported during the 1930s[87] but by the end of the Second World War such equipment was obsolete.[88] In 1955 a new Mining Law was passed,[89] but this also had little effect on mining activity.[90] Between 1931 and 1963 paid-up (financial) capital in mining enterprises increased from 19m. rials to 224m. rials, but this represented a rise of only one percentage point (from 2 per cent to 3 per cent) in total paid-up (financial) capital of Iranian enterprises.[91]

Some foreign enterprises have entered the mining field in recent years but the maximum amount of capital goods used is a few compressors and jack-hammers, with occasionally a short stretch of rail and some wagons.[92] Costly excavations are not made and mine buildings are rarely permanent structures.[93]

Thus it can be stated with certainty that capital formation in non-oil mining and quarrying has been completely insignificant in overall G.D.F.C.F. for the period 1900-1965.

The oil industry, however, is, and has been, a significant contributor to aggregate G.D.F.C.F. during the period under study. Yet capital formation in the

oil industry has been subject to considerable fluctuations - both for reasons endogenous to the industry and for exogenous reasons. The increase of fixed assets of the A.P.O.C. (later the A.I.O.C.) (at cost less depreciation) is shown for 1915-1951 in Table 11-4, together with details of extra depreciation charged.[94] The pattern of changes in total fixed assets (which is not, of course, the same as changes in G.D.F.C.F. in this case, but which can be taken as an accountant's approximation to the concept of Net D.F.C.F. when the extra depreciation is added to the annual change) follows that described by Longrigg in his detailed history of the Iranian oil industry.[95] The outstanding feature of the table is the enormous rise in annual additions to fixed assets between 1944-1951 relative to the previous 30 years.[96]

Following the nationalisation of the oil industry in the early 1950s, which, like the rest of the history of oil in Iran, is well documented,[97] the Iranian Oil Operating Companies started operation under a concession from the National Iranian Oil Company.[98] Annual increases in fixed assets by the I.O.O.C. and the N.I.O.C. for the period 1954-1965 have been obtained from the unpublished accounts of these companies and are shown in Table 11-5.

In rough terms the oil industry contributed 15 per cent to aggregate G.D.F.C.F. in the years up to 1930;

5 per cent between 1930 and 1945; 5 per cent between 1945 and 1950; and 10 per cent between 1960 and 1965.

* * * *

Manufacturing

Direct data on capital formation in manufacturing industry for the period under study are unavailable. However, for the years 1910-1948 statistics on the annual additions to installed horsepower in manufacturing plants have been obtained.[99] These can be used as a guide to the trend of capital formation in manufacturing because, with few exceptions, all mechanised plants had to install their own power supply.[100] From a census of manufacturing plants made in 1948, the horsepower figures were allocated to years on the basis of a given date of installation. These were available for plants which represented 94 per cent of the total horsepower existing in 1948 and which therefore can be considered an adequate sample.

Table 11-6 gives the annual installation of horsepower, and this is illustrated in graph 11-3. It suggests that before 1928 capital formation in manufacturing was sporadic, but that from 1929 there were continuous additions to the capital stock, with the five years 1934-1938 outstanding with respect to the volume of new installation. During the years of the Second World War new installation fell away (with the sole exception of 1942). These

figures accord with the known history of manufacturing in Iran - the 'bulge' of the 1930s coinciding with State investment in cement, textile and other plants.[101] Post-war surveys of the economy also stress the running down of plants during the war.[102]

A series of figures for capital formation in manufacturing was started after the Industrial Census of 1963.[103] These are given in Table 11-7. For the years between 1948-1962 it can be surmised that the trend of capital formation in mechanised manufacturing industry followed that of capital formation in imported capital goods. This is likely because the trend in horsepower installation 1930-1946 follows the trend in imported capital goods for the same period.[104] Therefore, it can be stated that capital formation in manufacturing industry probably remained fairly constant between 1950-1953 and that there was a sudden upsurge in capital formation between 1954-1960 with a slight setback in the following three years.

The degree to which imports of capital goods have been destined for use by the manufacturing sector (and hence the degree to which capital formation in 'modern' manufacturing has contributed to aggregate G.D.F.C.F.) is difficult to determine. However, it is highly likely that it is a high proportion, of the order of about 50

per cent, in recent years. If, in addition, expenditure on indigenous capital goods by manufacturing plants is taken into consideration, it can be estimated that the manufacturing sector has contributed a large and growing percentage of aggregate G.D.F.C.F. since 1955. This is partially confirmed by the statistics of paid-up (financial) capital in industrial enterprises, shown in Table 11-8. These show a rise from 34 per cent of aggregate paid-up (financial) capital in 1955 to 44 per cent in 1963. These same statistics also partially confirm the increase in the relative importance of the industrial sector in the mid-1930s, and, furthermore, they indicate a substantial rise in the six years 1945-1950, for which period other data are unavailable.[105]

* * * *

Construction

Expenditure on capital goods for the construction industry probably follows the same trend with respect to aggregate G.D.F.C.F. as does capital formation in dwellings and other construction and works. This is because methods of construction have always been labour-intensive, even though types of building materials, particularly in the urban areas, have changed.[106] One reliable estimate of the cost of capital equipment for construction of a 'modern' house in Tehran (overall cost two million rials)

in 1967 is 3,000 rials, or approximately 0.02 per cent.[107] This percentage will probably be higher for 'traditional' construction because of the lower cost of raw materials, but it is still insignificant in the total cost of most types of building.

For some buildings of over five stories, the use of heavy construction equipment such as cranes is made.[108] However, this is a phenomenon of the 1960s and is not likely to have affected capital formation greatly even in this period. In addition, most construction work is carried out by small enterprises[109] which have no separate office buildings.[110] And the few large construction enterprises generally rent office space.[111]

In general, therefore, in spite of the relatively large proportion of all types of construction in aggregate G.D.F.C.F. throughout the period 1900-1965, it can be concluded that capital formation in the construction industry itself has been small, with its relative importance in aggregate G.D.F.C.F. being slightly higher in periods when construction activity has been relatively high, but, in any case, probably never more than five per cent.

* * * *

Electricity, Gas and Water

Electricity

Capital formation in the electricity-supply industry

began in the early years of the twentieth century with the establishment of a generating plant in Tehran.[112] But it was not until the late 1920s that generating plants were introduced in quantity. Statistics for the annual additions to installed horse-power have been estimated from an unpublished survey taken in 1947 which covers 56 of the 92 plants in operation in that year.[113] These are given in Table 11-9, which shows that after initial advances, annual additions to horse-power dropped away until the boom of the mid-1930s. By 1935 it was reported that all major towns in the country had electric light.[114] Practically no new plants were established during the war although from 1945 aggregate horse-power began to increase again.

An excellent though little-known survey of the electricity-supply industry made in 1957, however, pointed out its inadequacies to the Government.[115] Following this report the Plan Organization introduced a large-scale programme for providing electricity to all the 184 urban areas enumerated in the 1956 census of population.[116] In addition, dam projects were commenced to provide a hydro-electric boost for the major industrial cities.[117] By 1965 installed capacity of electricity supply utilities was estimated at 1.5 million H.P.[118]

Imports of generating equipment by all types of users

can be traced through the trade statistics and these are shown for the years 1941-1965 in Table 11-10. These give a guide to the trend of capital formation in this period, and illustrate clearly the high rise in expenditure between 1959-1962.

In general it can be stated therefore that the mid-1930s and the late 1950s were the peak periods of capital formation in the electricity supply industry. It is likely that in these periods the relative importance of such capital formation in aggregate G.D.F.C.F. increased considerably.

Gas

A gas-supply enterprise was set up in Tehran at the turn of the century, but it did not remain in operation for more than a few months.[119] Before 1960 no further gas-supply enterprises were established, and between that date and 1965 the only capital formation was a short spur constructed from the southern oil field of Gachsaran to fuel a fertilizer plant in Shiraz.[120] The expense of this installation is included in the capital formation figures of the Plan Organization (Table 9-7). It can be stated with certainty that the gas-supply industry's contribution to aggregate G.D.F.C.F. has been negligible in the period 1900-1965.

Water

Water-supply organizations were established in many towns during the decade 1955-1965.[121] The first water-supply system outside of the oil concession area (where local systems were established by the oil companies)[122] was in Tehran, for which available statistics of the annual import of 'potential' capital goods are given in Table 11-11.[123] Expenditure on later water-supply systems, and on hydro-electric dams are included in expenditure on capital formation by the Plan Organization (Table 9-7). Before the urban water-supply systems were installed, qanat, well or springwater was utilised. It is considered that expenditure by water-supply organizations on capital formation only became relatively significant in aggregate G.D.F.C.F. after the mid-1950s and that this has been due mainly to heavy expenditure on dams.[124]

* * * *

Transport and Communication

Road Transport

In the period to 1925 little progress had been made in road construction,[125] and there had been a military rather than an economic influence on the highways actually built.[126] Of the 3157 Km of chaussee roads listed by the Government in 1925 a considerable proportion was either derelict or in very poor condition.[127] There were about

2000 automobiles in the country at this time, about half of this number being in the oil company's concession area.[128] Tolls were charged on many roads and import duties on trucks were high.[129]

The formation of a Department of Roads and Bridges in 1923,[130] the passing of a Road Tax Act in 1926 (in which tolls were replaced by an import surcharge on consumer goods),[131] and the promulgation of a Nine-Year Road Plan, drawn up in 1927 by an American adviser,[132] did much to alter this situation. In the year 1927/8 it was reported that expenditure on new road building was 12 million rials[133] and by 1938 approximately 24,000 Km of new roads had been built.[134] One indication of this progress is given by the number and value of vehicles imported by non-exempt organizations. This is shown for the years 1926-1950 in Table 11-12.

During the Second World War the occupying forces built, repaired and extended many of the country's roads,[135] and, although many of these improvements were short-lived,[136] the imports of vehicles continued at a high level in the post war years, as can be seen from Table 11-12.

Table 11-13 shows the total number of registered motor vehicles in Iran for the years 1948-1960.[137] It is clear from this table that during the period 1950-1953

the annual increase was not as great as in the years just before 1950; and that in the period from 1954 the annual increase expanded rapidly. This trend is probably the same for actual construction of roads.[138]

Before the yearly 1950s most road construction was labour-intensive.[139] In 1953 the Ministry of Roads owned only 21 usable pieces of mechanised equipment - mainly rollers.[140] During the period of the Second Plan, 1955-1962, however, vast quantities of divers equipment were imported. Indeed there was considerable 'over-investment' in this type of capital good by a multiplicity of contractors.[141] The mean percentage of machinery and equipment costs over total costs of road construction in this period rose to 23 per cent for 36 projects which covered 88 per cent of the total road building programme.[142] (The range of values of the machinery-equipment percentage was 12 per cent to 62 per cent.) However, some rationalisation of purchases of road-building equipment took place after 1962.[143]

Thus it can be concluded that before 1925 capital formation by the road transport division of the transport and communications sector was insignificant in aggregate G.D.F.C.F. From 1926-1940 the significance probably rose slightly, remaining constant to the mid-1950s. It is likely that between 1955-1962 capital formation in road

transport again started to rise as a proportion of aggregate G.D.F.C.F., but that this rise was halted after 1962.

Rail and Ports

Estimates of expenditure on rail and port construction for the years 1920-1948 are given in Table 9-9. Estimates of the weight and value of imports of rolling stock for the years 1928-1965 are given in Table 11-14, while the imported weight and value of railway track, sleepers, points, etc., for the same period are shown in Table 11-15.

These three tables illustrate clearly the progress of capital formation in railways and ports. 1928 saw the start of construction of the Trans-Iranian Railway[144] and it is estimated that between 20-30 per cent of aggregate G.D.F.C.F. was contributed by this project in the years 1935-1938.[145] It is doubtful whether the relative importance of capital formation in railways reached 10 per cent in any other year of the period under study, although it is likely that the years 1955-1958 approached this mark.[146]

Thus it can be stated that capital formation in railways and ports has been relatively insignificant except for the years of the mid-1930s and the mid-1950s, and that it was most significant in the former period.

Inland Water Transport

Expenditure on capital goods for the purposes of inland water transport has been confined to the period 1900-1925 by the Anglo-Persian Oil Company, the figures for which are included in the oil company accounts, and which refer to the navigable section of the Karun River.[147] Some boats ply Lake Rezaieh and these are mainly under the control of the Ministry of Roads or the Railways Board.[148] Figures for capital formation in the Lake Rezaieh enterprise are included in the section on railways and roads above. It is certain that expenditure on capital formation by inland water transport industry has been negligible in aggregate G.D.F.C.F.[149]

Air Transport

No details are available on capital formation by the air transport industry. The first air service in Iran started in 1931, but it is thought that no aeroplanes were purchased and no extensive expenditures made on air-fields (except military airfields) until the 1950s.[150] Expansion of Tehran airport and the following construction of provincial airfields was undertaken through the Plan Organization[151] and capital formation expenditures are included in, and inseparable from, the figures of Table 9-7.

From the end of the 1950s Iran Air, Persian Air Services and Iran National Air Lines (a merger of Iran

Air and P.A.S.) expanded their activities, and some aeroplanes were purchased rather than rented as previously.[152] It is likely that in the period 1960-1965, therefore, that capital formation by the air transport industry became a higher proportion of aggregate G.D.F.C.F. However, it is also likely that even in peak years of this period, the proportion remained insignificant. This is substantiated by figures on the import of aeroplanes and their parts for the years 1950-1965, shown in Table 11-16.

Communications

Expenditure on building, construction and works by the communications division of the transport and communications sector is included in the figures for Government Ministries (Table 9-8) and the Plan Organization (Table 9-7). Almost all other capital goods (telegraph poles are a notable exception) have been imported, and total imports by weight and value for telegraphic and telephonic equipment are given in Table 11-17 for the period 1928-1965. This table illustrates the fact that equipment imports have tended to fluctuate considerably, with peak periods around the end of each decade from the 1920s, though even in such peak periods they have never been in excess of two per cent of total imports of capital goods by either weight or value.

At the turn of the century a concessionary telegraph

network existed,[153] and, with the minor exception of the years 1917-1920, little expenditure on capital formation was made on this network.[154] It was handed over to Iran in 1925.[155] Progress in internal telegraphic communication since that date has been steady and is illustrated by the various statistics given for six years in Table 11-18. By 1962 there were public telegraphic connections (mainly Morse but with some teletype systems) at 506 points throughout the country, as well as a large number of special networks for large private and Government organizations.[156] From 1962 the major part of new capital formation in the telegraph network has been in replacing Morse by teletype systems.[157]

In 1924 there were under 2500 telephone subscribers in Iran.[158] Although this number increased gradually to 16,000 over the following 20 years[159] it was not until the late 1950s that the mushrooming of the telephone system began. Some substantiation of this statement is given by the trend of imports of telephone equipment shown in Table 11-17. By 1968 there were an estimated 78,000 telephone subscribers in the country, with capital formation being partly directed towards extending the network and partly towards installing automatic exchanges.[160]

Little relevant information is available on capital formation in postal services or in radio and television

broadcasting. It is certain that such capital formation would not have been significant in aggregate G.D.F.C.F. in any year of the period under study.[161]

Thus it may be concluded that, with the exception of certain peak years, capital formation in communications has generally been insignificant in relation to aggregate G.D.F.C.F.

* * * *

Distribution

Capital formation in wholesale and retail distribution comprises expenditure on shops, vehicles and other equipment. It is not possible to separate out vehicles used solely for purposes of distribution. Indeed, it is clear from the scarcity of vehicles in Iran which have wholesalers' or retailers' names printed on them,[162] that most vehicles in this sector are also used for private purposes. Delivery vans are rare, except for the distribution of bottled gas,[163] and heavy goods are generally carried by transport companies.[164] Considerable numbers of itinerant merchants use pack animals to carry their wares; others use bicycles or motor-cycles.[165] Livestock is, however, excluded under the definitions of Chapter 2, and no separate estimate can be made with regard to motorised or non-motorised cycles used or partially-used by the distribution sector.

Shop and warehouse equipment is, and has been since 1900, mainly indigenous. Furniture, calculating devices and scales for weighing and for measuring are only imported by the largest and the most modern stores, and then only when locally assembled or produced equipment is unavailable.[166] For the reasons given in Chapter 7, no detailed or rough estimate of expenditure on these is possible.

In Chapter 9, an assumption was supported that expenditure on distributors' buildings would follow the trend of house building. No other information on this sector can be produced to add to this assumption.

One piece of evidence does exist, however, on the relative importance of the distribution sector in aggregate capital formation. This relates to paid-up capital in commercial enterprises, which is given in proportional terms for the years 1934-1963 in Table 11-19.[167] The table shows a declining trend in the proportion of new annual paid-up capital through the period from around 77 per cent in 1934 to about 32 per cent in 1963. This is a trend which would be expected as technological progress in other sectors advanced in relation to the distribution sector.

* * * *

Banking, Finance and Insurance

A review of general progress in the banking sector

is given in my published article 'Banking and Economic Development in Iran',[168] which appears in this study as Appendix H. The trend of capital formation in banking, which comprises building, furniture, equipment, etc. is difficult to determine, however, as a considerable proportion of bank buildings (the major type of capital goods) has been, and still is, rented. Another difficulty is that it is known that certain types of capital goods, such as automobiles, are written off immediately in the bank accounts, and that the 'fixed assets' of banks do not, therefore, comprise all capital goods required to be included under the definitions of Chapter 2.[169] Nevertheless, it is probable that capital formation by the banking sector has never been significant in relation to aggregate G.D.F.C.F.

The major bank in Iran until the mid-1930s was the Imperial Bank of Persia (later the Imperial Bank of Iran). The annual estimate of fixed assets (after depreciation) for the years 1890-1938 has been obtained from the annual accounts of this bank.[170] The accounts also include capital goods in branches outside of Iran, but in the period to 1938 the number of outside branches never exceeded 5 and in most years was only two or three out of a total of between 20 and 30.[171] Additions to fixed assets in the period are given in Table 11-20. When

compared with the aggregate G.D.F.C.F. figures of Table 5-1, these can be seen to be insignificant.

Following the establishment of Bank Melli Iran (the National Bank of Iran) in 1927,[172] a number of branches of this bank outside Tehran were set up so that by 1931 there were 33 branches throughout the country.[173] From bank accounts available in this period, capital formation was never more than one million krans (rials) and therefore plays only an insignificant role in aggregate capital formation. Indeed it was not until 1956 that the million rial mark was exceeded by this bank,[174] by which date the proportional relationship to aggregate G.D.F.C.F. was even less important.

The Central Bank of Iran,[175] which since 1960 has possessed capital formation figures for all banks in the country, has refused to release this information. Moreover, the Bank also refused to allow a simple questionnaire about capital formation to be sent to all bank managers.[176] Consequently, data on banking sector capital formation for recent years are unavailable. Nevertheless, it can be stated with a high degree of probability that capital formation in this sector has remained insignificant in aggregate G.D.F.C.F. since 1960 and that this same conclusion applies therefore to the whole period under study.

There is no evidence either that capital formation

in insurance companies, of which there were nine in 1965,[177] and in other finance companies, including money lenders and money changers,[178] has been significant in the period 1900-1965.

* * * *

Ownership of Dwellings

Capital formation in this sector has been estimated in Chapter 8 and its relation to aggregate G.D.F.C.F. is discussed in Chapter 5. No further discussion of this sector is therefore required.

Education and Other Services

Education

Capital formation in education comprises buildings and school equipment (expenditure on other educational facilities and libraries having been minimal throughout the period under study). An unknown number of school and college buildings are rented and thus it is impossible to distinguish expenditure on educational buildings from the annual figures given in Tables 9-2 and 9-8.[179]

The trend of capital formation is, however, likely to be reflected in the expansion of the number of schools in the country. This is shown in Table 11-21 for various years in the period to 1952 and for all years from 1952 to 1965. It can be seen that the greatest increases have been in the years following World War I, in the late 1930s

and in the period 1957-1965. Further substantiation of this trend is given by the figures of the National Education Budget, Table 11-22, for the same years as found in Table 11-21. (However, the actual proportion of these budget figures spent on capital formation cannot be estimated or even guessed. Indeed, the quality of educational statistics in general before the 1960s has been subject to severe criticism by Brolin.)[180]

Since educational buildings have always been a small proportion of total buildings (other than dwellings)[181] it is doubtful whether capital formation in education by itself has ever been significant in aggregate G.D.F.C.F.

Other Services

In the field of health services, capital formation has been mainly in the form of hospital building and the purchasing of equipment from abroad for these hospitals or for private surgeries.[182] The highest level of capital formation will have been in the period 1962-1965, although it is certain that even in these years it was insignificant in relation to aggregate G.D.F.C.F. A breakdown of the major types of hospitals and the number of available beds in 1965 is given in Table 11-23.

The same conclusion applies to recreational and entertainment facilities, in which the major type of capital formation has been in the construction of cinemas.[183]

Expenditure on such construction is included in the urban figures for other privately constructed building and works and is inseparable from these.

Capital formation in domestic services consists almost exclusively of the purchase of small, indigenous implements[184] and no estimate can be made of the proportion involved except in so far as it is probably related to the non-agricultural usage of such implements.[185]

Expenditure on the construction of hotels, inns and restaurants is included in the figures for other building and works. During the 1930s a number of state-owned hotels were constructed[186] and during the late 1950s and the 1960s a larger number of private hotels were built.[187] These are the peak periods of capital formation in this division of the services sector.

A multiplicity of launderers, cleaners, hairdressers, etc., exist in Iran, both in establishments and on an itinerant basis. And there are many offices of professional men such as lawyers. But it is doubtful whether capital formation has even been significant in these fields.[188]

In addition, no estimate can be made of construction expenditure by religious organizations, although it is likely that the major proportion of such expenditure is made for repairs and maintenance to old religious buildings, and would therefore be necessarily excluded from the present

estimates.

Taken together, capital formation in the various divisions of the services sector may have been significant in some years throughout the period 1900-1965. However, it is doubtful whether it has ever reached two per cent of aggregate G.D.F.C.F. in even the peak years.

* * * *

Public Administration

It is highly likely that capital formation in the Public Administration sector has followed the same trend as expenditure on construction by Government Ministries and Municipalities.[189] This is shown in Table 9-8 and Table 9-10. It is also likely that the relative significance of this expenditure in aggregate G.D.F.C.F. has been under five per cent for the period under study, with a slightly higher significance in the mid-1930s. Before 1925 there is no evidence of extensive Government spending on construction[190] and this also applies to the period of the Second World War.[191] In the post-1945 period it is likely that expansion of other elements in aggregate G.D.F.C.F. has made capital formation in the Public Administration sector relatively less important than in the 1930s.

* * * *

Conclusion

In the attempt to discover the changing sectoral composition of G.D.F.C.F. between 1900-1965, those sectors and parts of sectors which have made no significant contributions for the 65 years may first be eliminated. These are:

Forestry
Non-oil mining
Gas
Banking, Finance and Insurance
Inland Water Transport and Air Transport
Communications

The contribution to G.D.F.C.F. of the 'Ownership of Dwellings' sector has been calculated in Table 5-3. For the period 1900-1925 it is, on average, 40 per cent; 1926-1939, 18 per cent; 1940-1954, 43 per cent; 1955-1965, 22 per cent.[192] Thus the following proportions of G.D.F.C.F. remain to be explained.

1900-1925	60 per cent
1926-1939	82 per cent
1940-1954	57 per cent
1955-1965	78 per cent

1900-1925

Based on the discussion of this chapter, a realistic, if rough, division of the 60 per cent of G.D.F.C.F. remaining to be explained would be 40 per cent by the agricultural sector (including the expenditures by the Caspian fisheries in the years to 1917), 15 per cent by the oil sector, and 5 per cent by all other sectors. This accords with the

high proportion of G.D.F.C.F. (35 per cent) spent on indigenous implements, estimated in Chapter 5, and also with the estimates of capital formation by the oil industry made in Chapters 6 and 9.

1926-1939

It is estimated that in this period expenditure on capital formation by the road (5 per cent) and rail (25 per cent) divisions of the transport and communications sector accounted for about 30 per cent of the 82 per cent reamining to be explained. Roughly 5 per cent was contributed by the oil industry, and it is certain that the contribution of the agricultural sector was also considerably lower in this period - perhaps also 5 per cent. The large rise in the proportion of capital formation in imported machinery, plant and equipment over the previous period indicates an expansion of the main sectors using these capital goods - i.e. the manufacturing sector and the electricity division of the electricity, gas and water sector - to contribute roughly 35 per cent of G.D.F.C.F. The remaining 7 per cent constitutes the contribution of all other sectors, with the major part of this probably being taken by the education, health, and hotels divisions of the services sector, and by the Public Administration sector.

1940-1954

The average contribution of imported machinery, plant and equipment, fell in this period to 18 per cent of G.D.F.C.F. and this accords with the decline during the war of manufacturing and electricity, noted earlier in this chapter. It can be estimated that about 10 per cent of G.D.F.C.F. was contributed by manufacturing and electricity, and about the same proportion by agriculture; 5 per cent was contributed by the oil industry and the highest contribution (apart from the 'ownership of dwellings' sector) was probably made by road and rail transport (around 20 per cent).

1955-1965

In the final period the contribution of agriculture may be estimated at 5 per cent, the oil industry at 10 per cent with about 20 per cent having been contributed by the transport and communications sector. It may be estimated that 35 per cent was contributed by the manufacturing and electricity-generating industries and the remaining 8 per cent by all other sectors.

Thus it may be concluded that the main features of the sectoral composition of G.D.F.C.F. in the period 1900-1965 are as follows:

a. The high proportion (40 per cent) taken by the 'ownership of dwellings' sector in the two periods

when the economy was making least progress, compared with the much lower proportion (20 per cent) when the economy was expanding.

b. The secular decline of agriculture's contribution, with a higher proportion applying in periods of least progress.

c. The high, but declining (30 per cent to 20 per cent), proportion taken by the transport and communication sector since the mid-1920s.

d. The high proportion (35 per cent) taken by the manufacturing and electricity supply industry in the second and fourth periods.

It must be stressed that the percentages given in the final section of this chapter are subjectively estimated. Nevertheless, it is probable that the conclusions given above are a realistic, if rough, interpretation of the sectoral structure of capital formation in Iran since the turn of the century.

Table 11-1: Capital Formation in Indigenous Agricultural Goods

(millions of rials - current prices)

Year	Expenditure	G.D.F.C.F.	Expenditure % of G.D.F.C.F.
1900	98.0	297.1	33%
1930	122.0	882.0	14%
1946	1218.0	11070.4	11%
1956	2310.0	40527.9	6%
1965	5687.0	100902.1	6%

Source: Table 5-1 and data in Chapter 11.

Table 11-2: Imports of Agricultural Machinery, 1937-1965

(weight in 000 Kg, value in 000 rials)

Year	Tractors		Machinery		Total	
	Weight	Value	Weight	Value	Weight	Value
1965	9819.5	1118920.9	5257.5	524685.4	15077.0	1643606.3
1964	9788.4	1019325.7	5965.1	646326.1	15753.5	1665651.8
1963	3538.3	396486.4	2095.0	212681.4	5633.3	609167.8
1962	4283.8	477933.4	3971.9	428823.7	8255.7	906757.1
1961	6088.6	631753.3	4894.8	589072.6	10983.4	1220825.9
1960	6440.8	717266.3	3572.6	353229.9	10013.4	1070496.2
1959	6019.9	570150.7	3809.0	309506.6	9828.9	879657.3
1958	6332.7	621426.1	4831.4	368977.5	11164.1	990403.6
1957	1610.0	168114.8	1305.4	99288.7	2915.4	267403.5
1956	912.9	69041.8	618.0	32064.8	1530.9	101106.6
1955	572.0	47139.6	1022.0	91646.7	1594.0	138786.3
1954	1005.6	87840.2	1088.5	118107.3	2094.1	205947.5
1953	248.4	15705.5	1153.7	45258.4	1402.1	60963.9
1952	185.3	14297.2	184.2	18117.7	369.5	32414.9
1951	671.1	19437.0	1930.5	65663.7	2601.6	85100.7
1950	769.1	22940.6	1056.4	28256.8	1825.5	51197.4
1949	1129.3	34189.7	1073.8	31298.9	2203.1	65488.6
1948	1126.4	47410.9	699.3	19527.4	1825.7	66938.3
1947	434.7	11302.5	209.6	5887.9	644.3	17190.4
1946	235.8	3801.7	115.0	3496.2	350.8	7297.9
1945	338.0	2377.0	94.0	811.0	432.0	3188.0
1944	-	-	81.5	373.8	81.5	373.8
1943	262.9	10674.7	68.2	521.4	331.1	11196.1
1942	121.4	1244.5	138.0	784.1	259.4	2028.6
1941	29.2	261.3	43.1	422.8	72.3	684.1
1940	n.a.	n.a.	n.a.	n.a.	317.7	2223.0
1939	n.a.	n.a.	n.a.	n.a.	7986.9	39293.9
1938	n.a.				391.3	2595.0
1937	n.a.				432.9	2843.9

Source: Iranian Foreign Trade Statistics, 1937-1965

Notes:

a. Tariff nos. 834, 835, 836, 889 for years 1950-1965. Tariff nos. 1799-1802, 1962 for years 1941-1949. Tariff nos. 954 for years 1937-1940.

b. Annual totals for 1937 and 1938 have been estimated from statistics for the economic years 1936-1937 and 1937-1938.

c. All figures include both exempt and non-exempt imports of agricultural machinery. For years in which the exempt imports were not tabulated, an annual total was calculated from the individual imports of exempt organizations.

Table 11-3: Imports of 'Potential' Capital Goods by State (Caspian) Fisheries Organization, 1934-1956

(weight in 000 Kg; value in 000 rials)

Year	Weight	Value
1956	2.5	231.7
1955	-	-
1954	30.7	5144.6
1953	1.9	174.7
1952	81.8	280.7
1951	247.2	1145.5
1950	464.4	3570.5
1949	135.3	392.1
1948	120.1	1140.9
1947	161.7	3764.7
1946	26.6	472.9
1945	n.a.	n.a.
1944	21.2	138.1
1943	0.2	7.0
1942	n.a.	n.a.
1941	46.4	117.4
1940	164.2	362.6
1939	74.4	157.0
1938 **	42.9	132.7
1937 *	135.0	414.6
1936 *	122.7	266.9
1935 *	9.4	117.2
1934 *	3.0	17.6

Source: Iranian Foreign Trade Statistics

Notes: * Refers to economic year, June 21 - June 21
** Nine months only

Table 11-4: Total Fixed Assets (at cost less depreciation) of the Anglo-Iranian Oil Company, 1915-1951

(in £000)

Year	End Year Total of Fixed Assets	Change over previous year	Extra Depreciation
1915	1555		
1916	1699	144	
1917	1718	19	
1918	1720	2	
1919	2815	1095	
1920	n.a.	}	
1921	5385	2570 }	
1922	6456	1071	
1923	6689	233	
1924	6735	46	
1925	6074	-661	
1926	5387	-687	
1927 *	5456	69	
1928 *	5925	469	
1929	5534	-391	352
1930	6725	1191	487
1931	6822	97	502
1932	4891	-1931	1571
1933	4032	-859	459
1934	3600	-432	459
1935	3994	394	408
1936	3877	-117	515
1937	4385	508	744
1938	6575	2190	603
1939	7662	1087	571
1940	6858	-804	625
1941	5813	-1045	625
1942	6349	536	2000
1943	5656	-693	
1944	7370	1714	
1945	10620	3250	
1946	10217	-403	
1947	11606	1389	
1948	19188	7582	
1949	27639	8451	
1950	28684	1045	
1951	33302	4618	

Source: Annual accounts of Anglo Iranian Oil Company

Notes: * There is an overlap of 3 months in the figures of 1927 and 1928 due to a change in the date of the accounts.

Table 11-5: Annual increases in Fixed assets of the I.O.O.C. and the N.I.O.C., 1954-1965

(million rials)

Year	I.O.O.C.	N.I.O.C.
1965	8043.0	4439.7
1964	3822.0	1063.5
1963	4116.0	887.6
1962	4977.0	452.2
1961	4746.0	1431.8
1960	4641.0	2324.7
1959	5922.0	1950.3
1958	7077.0	1093.6
1957	3339.0	949.5
1956	1386.0	1372.3
1955	(630.0	1290.7
1954	(	-

Sources: I.O.O.C. figures from annual accounts of I.O.O.C.
N.I.O.C. figures from annual accounts of N.I.O.C.

Notes: I.O.O.C. figures converted from sterling at a rate of £1 = 210 rials.

Table 11-6: Annual Additions to Installed Horsepower in Manufacturing Industry, 1910-1947

(in horsepower)

Year	H.P.	Year	H.P.
1910	260	1929	2105
1911	3	1930	3500
1912	-	1931	1666
1913	4	1932	1599
1914	-	1933	879
1915	12	1934	4824
1916	-	1935	8838
1917	-	1936	8654
1918	1008	1937	7493
1919	-	1938	9127
1920	-	1939	2202
1921	240	1940	570
1922	-	1941	158
1923	-	1942	3300
1924	-	1943	233
1925	1100	1944	-
1926	1005	1945	-
1927	-	1946	223
1928	-	1947	13

Source: Iran, Ministry of Labor, 'National Survey of Industrial Statistics, 1947', Mehr Press, Tehran. 1948. (Persian)

Notes: Annual additions to horsepower calculated from date of installation of existing horsepower capacity in 1947.

Table 11-7: Capital Formation in Manufacturing Industry*, 1963-1965

(in million rials)

Year	Total
1963	3150.8
1964	4641.5
1965	5848.5

Source: Annual Statistical Publications of Ministry of Economy.

Note: * Refers to urban manufacturing plants only.

Table 11-8: Paid-up (financial) Capital in Manufacturing Establishments, 1935-1963

(in million rials)

Year	Paid-up capital	% of total paid-up capital
1935	118.6	12.2
1940	402.0	21.7
1945	1065.6	21.3
1950	5308.4	34.7
1951	4950.2	37.9
1952	5785.8	36.3
1953	6203.5	35.5
1954	6821.3	35.1
1955	7771.0	34.3
1956	8721.2	33.8
1957	10438.5	34.2
1958	13395.7	35.7
1959	15739.7	35.5
1960	17132.9	33.0
1961	18279.6	33.5
1962	28378.6	43.0
1963	31548.1	44.0

Source: Bank Markazi Iran, 'Changing Trends in Iranian Companies', Tehran, unpublished (Persian), 1965, p.124.

Notes: Permission to quote from this document was granted by the Statistical Research Department of the Bank Markazi, Iran.

Table 11-9: Annual Additions to Installed Horsepower in the Electricity-Supply Industry, 1928-1947

Year	Installed H.P.	Year	Installed H.P.
1928	1205	1938	1365
1929	275	1939	24
1930	100	1940	235
1931	200	1941	-
1932	40	1942	-
1933	891	1943	-
1934	170	1944	190
1935	160	1945	405
1936	465	1946	432
1937	11415	1947	629

Source: Iran, Ministry of Labor, 'National Survey of Industrial Statistics, 1947', Mehr Press, Tehran, 1948. (Persian)

Notes: Annual additions to horsepower calculated from date of installation of existing horsepower capacity in 1947. The data cover 56 of the 92 plants existing in 1947. Comparative figures for 1960 are 309 plants with a total installed capacity of 368598 H.P.

Table 11-10: Imports of Electricity-Generating Equipment, 1941-1965

(in 000 Kg and 000 rials)

Year	Weight	Value
1941	28.9	679.9
1942	27.4	665.7
1943	21.3	277.2
1944	79.1	2545.4
1945	107.0	3824.0
1946	522.8	17228.2
1947	263.8	10761.2
1948	240.8	12406.8
1949	1400.3	72346.9
1950	2145.2	83185.7
1951	1256.7	64980.9
1952	781.2	73842.7
1953	609.5	120606.6
1954	740.3	94734.1
1955	1710.6	233938.7
1956	1760.3	182642.3
1957	2833.9	289793.6
1958	5427.8	448370.1
1959	6756.6	904527.0
1960	6474.4	888453.5
1961	5329.9	619685.1
1962	5379.5	664117.4
1963	3506.5	459389.1
1964	3548.1	451084.3
1965	4923.0	729355.3

Source: Iranian Foreign Trade Statistics

Notes: Tariff no.859 used for years 1950-1965; Tariff no.1891 used for years 1941-1949. Figures for years prior to 1941 are not comparable. The equipment includes electric generators, motors and converters, transformers and choking coils. Figures for imports by exempt organizations have been estimated from data for each organization.

Table 11-11: Imports of 'Potential Capital Goods' by the Tehran Water Board, 1955-1957.

(in 000 Kg. and 000 Rials)

Year	Weight	Value
1955	237.9	28577.2
1956	473.3	14131.8
1957	1309.3	77340.6

Source: Iranian Trade Statistics, section on imports exempt from duties.

Table 11-12: Imports of Cars, Trucks and Other Vehicles by non-exempt Importers, 1926-1950

(values in 000 rials)

Year	Cars		Trucks		Other Vehicles	
	No.	Value	No.	Value	No.	Value
1926	1330	10324.4	967	12562.8	-	-
1927	1112	8032.5	977	11939.5	-	-
1928	1369	11110.4	1760	23192.5	23	487.0
1929	1529	14448.8	1515	19104.3	10	226.0
1930	566	6143.0	598	10173.3	1	61.1
1931	315	5079.2	570	16919.3	4	87.1
1932	292	5797.9	627	25475.3	-	-
1933	617	8640.7	1435	33143.3	9	163.3
1934	1325	17904.6	1394	28560.0	31	1135.3
1935	1317	20884.7	1800	38710.9	20	918.8
1936	1047	15753.0	1938	40393.3	41	2603.4
1937	400	6020.7	1496	41321.4	15	554.9
1938	228	3745.0	590	12298.7	6	377.3
1939	444	7602.4	99	1959.7	5	273.5
1940	735	14338.2	327	7432.1	12	657.8
1941	551	11563.3	845	14574.7	1	37.6
1942	89	3133.5	42	1837.9	1	57.4
1943	117	6006.2	92	3709.5	4	254.5
1944	78	3863.1	501	31614.9	1	44.4
1945	242	7583.9	2716	86056.3	46	1570.6
1946	1508	58282.1	4099	142960.9	131	6554.3
1947	2969	141504.7	2179	121124.4	155	6581.4
1948	2062	118350.9	1313	78226.5	93	5772.0
1949	3329	186196.4	2844	261633.0	179	11901.8
1950	2574	136159.4	2336	213414.1	142	10620.2

Source: Foreign Trade Statistics of Iran.

Note: Figures for 1931 cover 15 months; figures for 1938 cover 9 months; figures for years 1932-1937 are 'economic years', not calendar years - i.e. they run from June 21 to June 20. The distinction between trucks and other vehicles in this table is probably different from that in Table 11-13.

Table 11-13: Registered Motor Vehicles in Iran, 1948-1960

(totals at end of year)

Year	Cars	Trucks	Others	Total
1948	12387	11667	4100	28154
1949	15915	14119	4551	34585
1950	19614	15269	5244	40127
1951	21240	14613	4826	40679
1952	23543	15489	5387	44419
1953	25311	16523	5316	47150
1954	29138	18740	5884	53762
1955	33666	20612	9835	64113
1956	41094	19911	10608	71613
1957	52548	25543	10434	88525
1958	67175	28549	13755	109479
1959	79450	31925	15928	127303
1960	94064	35512	20615	150191

Source: Zipkes, E., 'Draft Final Report on Road Construction and Maintenance', Tehran, 1962, Figure 4.

Note: The distinction between trucks and other vehicles in this table is probably different from that in Table 11-12.

Table 11-14: Imports of Railway Rolling Stock, 1928-1965

(weight in 000 Kg, value in 000 rials)

Year	Weight	Value	Year	Weight	Value
1928	n.a.	298.6	1947	566.8	3389.3
1929	n.a.	4697.0	1948	1840.2	14356.0
1930	5.0	47.0	1949	1219.4	9093.2
1931	3.9	276.0	1950	1062.9	25469.7
1932	99.6	2245.8	1951	548.7	20538.1
1933	-	-	1952	32.6	3597.7
1934	57.3	1492.5	1953	3200.9	217585.3
1935	82.5	728.6	1954	4264.2	261483.0
1936	81.5	28432.7	1955	3048.6	92329.1
1937	2053.9	12018.5	1956	5114.9	861286.1
1938	12013.3	50707.5	1957	3341.8	321174.9
1939	7996.0	17167.0	1958	18690.1	1022363.6
1940	1021.5	5282.0	1959	3792.9	640104.4
1941	640.5	1876.5	1960	4877.5	187173.1
1942	358.0	5588.3	1961	395.6	53684.6
1943	12.9	69.1	1962	1493.3	94087.1
1944	161.9	916.6	1963	360.8	39057.0
1945	256.0	4852.0	1964	123.6	29797.5
1946	831.8	9839.2	1965	394.8	105536.4

Source: Iranian Foreign Trade Statistics

Notes: Tariff nos. 879-888 used for years 1950-1965;
nos. 1946-1961 used for years 1940-1949;
nos. 1051-1061 used for years 1936-1939;
no. 328 used for years 1933-1935; and no. 181 used for years 1928-1932.
Figures for 1931 are for 15 months; for 1938 are for 9 months; and for the years 1932-1937 are for 'economic years'.
Figures for imports by exempt organisations have been estimated from data for each organisation.

Table 11-15: Imports of Railway Track, Sleepers, Points, etc., 1928-1965

(weight in 000 Kg, value in 000 rials)

Year	Weight	Value	Year	Weight	Value
1928	2621.9	4455.2	1947	4676.3	6952.7
1929	10916.0	18612.8	1948	173.0	550.5
1930	72.7	668.5	1949	56.0	172.4
1931	350.8	773.4	1950	10140.8	20544.7
1932	1256.3	6552.5	1951	26954.6	74149.9
1933	18605.7	52491.5	1952	248.1	2052.1
1934	2152.0	5398.7	1953	690.4	6116.7
1935	27183.6	29964.1	1954	10442.8	127535.1
1936	23401.0	24982.0	1955	100039.2	961550.8
1937	38379.5	39984.6	1956	69896.6	452849.1
1938	16934.1	17588.4	1957	10788.7	91615.8
1939	19716.4	18156.8	1958	11247.5	79356.3
1940	24702.7	27757.4	1959	31028.4	298054.4
1941	42229.3	80298.3	1960	40564.2	387097.9
1942	2371.2	6307.3	1961	1857.4	22853.3
1943	-	-	1962	2412.5	43175.0
1944	444.7	1139.1	1963	4558.9	54713.0
1945	29512.0	3318.2	1964	837.6	9417.7
1946	680.3	1358.6	1965	1239.8	10276.0

Source: Iranian Foreign Trade Statistics

Notes: Tariff nos. 713-6 for years 1950-1965; nos. 1494-7 for years 1940-1949; nos. 826-7 for years 1936-1939; nos. 523 for years 1933-1935; and no. 310 for years 1928-1932.
Figures for 1931 are for 15 months; for 1938 for 9 months and for the years 1932-1937 are for 'economic years'.
Figures for imports by exempt organizations have been estimated from data for each organization.

Table 11-16:) Kg; value
Imports or Aeroplanes and Parts, 1950-1965

(weight in 000 Kg; value in 000 rials)

Year	Weight	Value
1950	20.6	5410.1
1951	7.5	6861.1
1952	-	-
1953	-	-
1954	0.1	360.0
1955	5.5	16237.5
1956	9.0	16468.5
1957	27.2	34394.2
1958	17.3	24115.0
1959	60.8	123498.8
1960	14.3	14475.8
1961	12.2	15821.9
1962	7.3	69840.8
1963	57.8	22589.6
1964	24.3	38367.4
1965	23.1	104888.8

Source: Iranian Foreign Trade Statistics

Notes: Tariff no. 901 was employed.
Figures for imports by exempt organizations have been estimated from data for each organization.

Table 11-17: Imports of Telegraphic and Telephonic Equipment, 1928-1965

(weight in 000 Kg; value in 000 rials)

Year	Telegraph Equipment		Telephone Equipment		Total	
	Weight	Value	Weight	Value	Weight	Value
1928	n.a.	n.a.	n.a.	n.a.	70.1	1020.4
1929	n.a.	n.a.	n.a.	n.a.	53.9	1128.2
1930	n.a.	n.a.	n.a.	n.a.	13.7	429.1
1931	n.a.	n.a.	n.a.	n.a.	7.7	779.7
1932	n.a.	n.a.	n.a.	n.a.	5.5	362.6
1933	n.a.	n.a.	n.a.	n.a.	19.9	1809.1
1934	n.a.	n.a.	n.a.	n.a.	55.7	2090.4
1935	n.a.	n.a.	n.a.	n.a.	408.2	3974.2
1936	6.1	355.0	19.1	959.2	25.2	1314.2
1937	6.5	557.4	126.7	2375.9	133.2	2933.3
1938	33.8	426.8	365.6	4437.4	399.4	4864.2
1939	52.9	1001.6	402.9	3031.0	455.8	4032.6
1940	53.5	2059.1	26.5	1387.3	80.0	3446.4
1941	n.a.	n.a.	n.a.	n.a.	30.2	1903.0
1942	n.a.	n.a.	n.a.	n.a.	36.7	735.4
1943	n.a.	n.a.	n.a.	n.a.	14.8	1773.9
1944	n.a.	n.a.	n.a.	n.a.	8.5	758.4
1945	n.a.	n.a.	n.a.	n.a.	69.0	2493.0
1946	n.a.	n.a.	n.a.	n.a.	67.9	11313.9
1947	n.a.	n.a.	n.a.	n.a.	374.4	8309.1
1948	n.a.	n.a.	n.a.	n.a.	489.1	38828.7
1949	n.a.	n.a.	n.a.	n.a.	213.2	13902.3
1950	50.6	5641.0	634.2	33907.1	684.8	39548.1
1951	2.0	264.0	336.8	30701.3	338.0	30965.3
1952	1.1	2434.1	45.6	11841.7	46.7	14275.8
1953	7.0	5804.9	26.7	11076.7	33.7	16881.6
1954	6.5	7721.1	55.4	2225.2	61.9	29976.3

Table 11-17: Imports of Telegraphic and Telephonic Equipment, 1928-1965

(weight in 000 Kg; value in 000 rials)

Year	Telegraph Equipment		Telephone Equipment		Total	
	Weight	Value	Weight	Value	Weight	Value
1955	5.9	6631.3	73.9	32717.0	79.8	39348.3
1956	3.0	1604.7	185.5*	42460.0*	188.5*	44064.7*
1957	71.6	31056.0	374.4*	128412.7*	446.0*	159468.7*
1958	295.6	61178.3	151.5	57395.9	447.1	118574.2
1959	60.5	55527.0	930.4	365278.4	990.9	420805.4
1960	231.1	91232.7	439.0	170504.6	670.1	261737.3
1961	28.4	23121.2	155.7	69411.4	184.1	92532.6
1962	85.1	44097.8	389.9	214575.2	475.0	258673.0
1963	47.8	60373.3	186.8	107227.1	234.6	167600.4
1964	39.1	35090.5	467.2	288904.3	506.3	323994.8
1965	14.2	21126.9	880.6	504233.0	894.8	525359.9

Source: Iranian Foreign Trade Statistics

Notes: Tariff nos. 869A and 869B for years 1950-1965; nos. 1915-1916 for years 1940-1949; nos. 960-1 for years 1936-1939; nos. 145, 146 and 152 for years 1933-1935; and no. 277 for years 1928-1932.

* includes Tariff no. 869C also.

For notes of coverage for years 1931-1938 and for imports by exempt organizations, see notes to Table 11-15.

Table 11-18: The Progress of Telegraphic Communications 1904-1965

Year	Lines (Km)	Wire (Km)	Offices	No. of Messages (000)
1904	9640	16045	130	216
1920	10824	20831	134	868
1930	15207	25830	172	945
1940	21605	34153	247	2192
1950	18744	33706	259	5204
1954	18592	33024	329	5716
1962	n.a.	n.a.	506	5552

Sources: Years 1904-1954 from Agah, M., 'Some Aspects of Economic Development of Modern Iran', Oxford University D.Phil. thesis, unpublished, 1958, p.40; brief data for 1962 from Iran, Plan Organization, 'Fourth National Development Plan, 1968-1972', Tehran, 1968, pp.216-7.

Table 11-19: Proportion of Paid-up (financial) Capital in Commercial Enterprises, 1935-1963

Year	Proportion	Year	Proportion
1935	76.8	1956	39.5
1940	63.6	1957	37.6
1945	60.0	1958	36.7
1950	45.3	1959	37.2
1951	36.0	1960	41.5
1952	44.0	1961	40.2
1953	46.0	1962	34.7
1954	44.9	1963	32.7
1955	41.1		

Source: Bank Markazi Iran, 'Changing Trends in Iranian Companies', Tehran, unpublished (Persian), 1965, p.124.

Notes: Permission to quote from this document was granted by the Statistical Research Department of the Bank Markazi Iran.

Table 11-20: Fixed Assets of the Imperial Bank of Iran, 1900-1938

(in £ sterling)

Year	Total Fixed Assets at end of year	Year	Total Fixed Assets at end of year
1900	13814	1920	55420
1901	23941	1921	50117
1902	22338	1922	38786
1903	22571	1923	58675
1904	30338	1924	51107
1905	32042	1925	29788
1906	32709	1926	14037
1907	34512	1927	37527
1908	37514	1928	23626
1909	37371	1929	32808
1910	42878	1930	14374
1911	50687	1931	2963
1912	53128	1932	8520
1913	55308	1933	7744
1914	51834	1934	5373
1915	49308	1935	2670
1916	42508	1936	1592
1917	29194	1937	1041
1918	19165	1938	1000
1919	13059		

Source: Annual Balance Sheet of the Imperial Bank of Iran - an unpublished collection of these was made available by Mr. Francis, Secretary of the British Bank of the Middle East.

Notes: The value of the fixed assets was converted from Persian currency into £ sterling at the current rate of exchange for years after 1918 and at an average rate for prior years.

Table 11-21: Number of Educational Establishments in Iran, 1917-1965

Year	Kindergartens	Primary Schools	High Schools	Vocational and Training Schools	Universities and Colleges
1917	-	45	11	-	
1924	-	638	86	-	
1929	-	1000	141	-	
1934	22	1301	160	17	
1940	34	2331	321	32	
1943	30	2375	286	53	
1947	59	3224	283	37	
1952	74	5675	465	36	
1953	115	5956	527	40	
1954	98	6273	632	53	
1955	103	6736	739	49	
1956	165	7301	842	93	
1957	202	7750	963	115	
1958	280	8488	1125	109	
1959	286	9289	1163	146	
1960	348	9809	1183	137	
1961	254	10852	1184	132	9
1963	262	13302	1269	146	29
1964	280	15657	1402	153	29
1965	257	19499	1554	175	36

Source: Iran, Ministry of Education, 'Educational Statistics in Iran', Tehran, annually from 1962.

Notes: Data on universities and colleges are not available before 1961.

Table 11-22: Iran's Education Budget, 1925-1960

(in 000 rials)

Year	Budget
1925	7.7
1930	19.0
1935	58.0
1941	154.9
1944	217.8
1948	640.0
1953	1681.2
1957	4711.6
1960	7489.8

Source: Iran, Ministry of Education, 'Educational Statistics in Iran', Tehran, 1962, p.14.

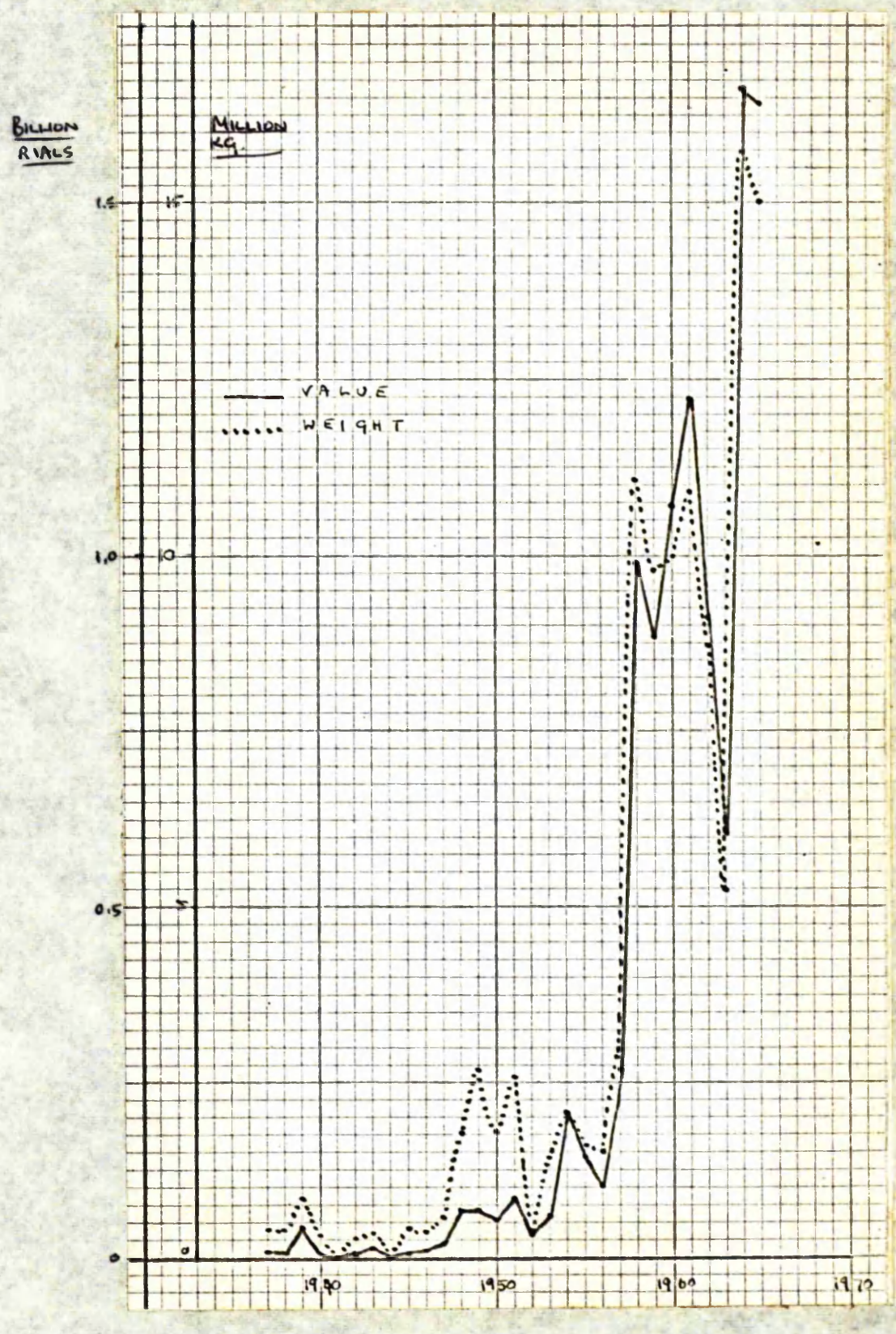
Notes: The Budget refers to expenditures by the Ministry of Education for administration, capital formation, etc., students sent abroad, teacher training classes, Tehran and rural universities, and the promotion of arts and culture.

Table 11-23: No. of Hospitals and Beds, 1965

Establishments	No.	No. of Beds
T.B. Hospitals	9	3355
Leprosy Hospitals	2	655
Mental Hospitals	10	2314
General Hospitals	361	20168
Total	382	26492

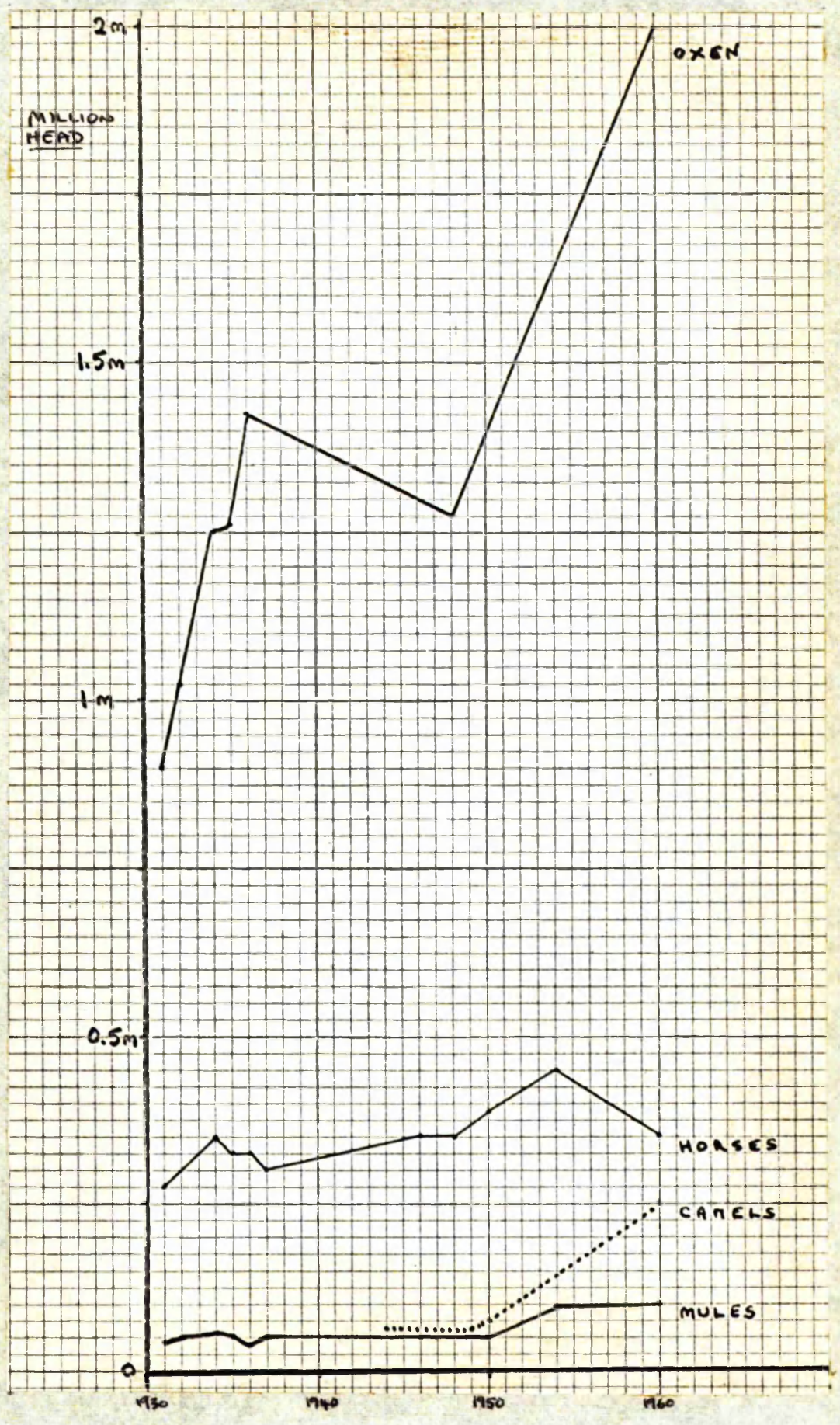
Source: Iran, Ministry of Health, 'General Picture of Health Statistics in Iran', Tehran, 1965, p.50.

Graph 11-1: Imports of Agricultural Machinery 1937-1965, by Weight and Value.



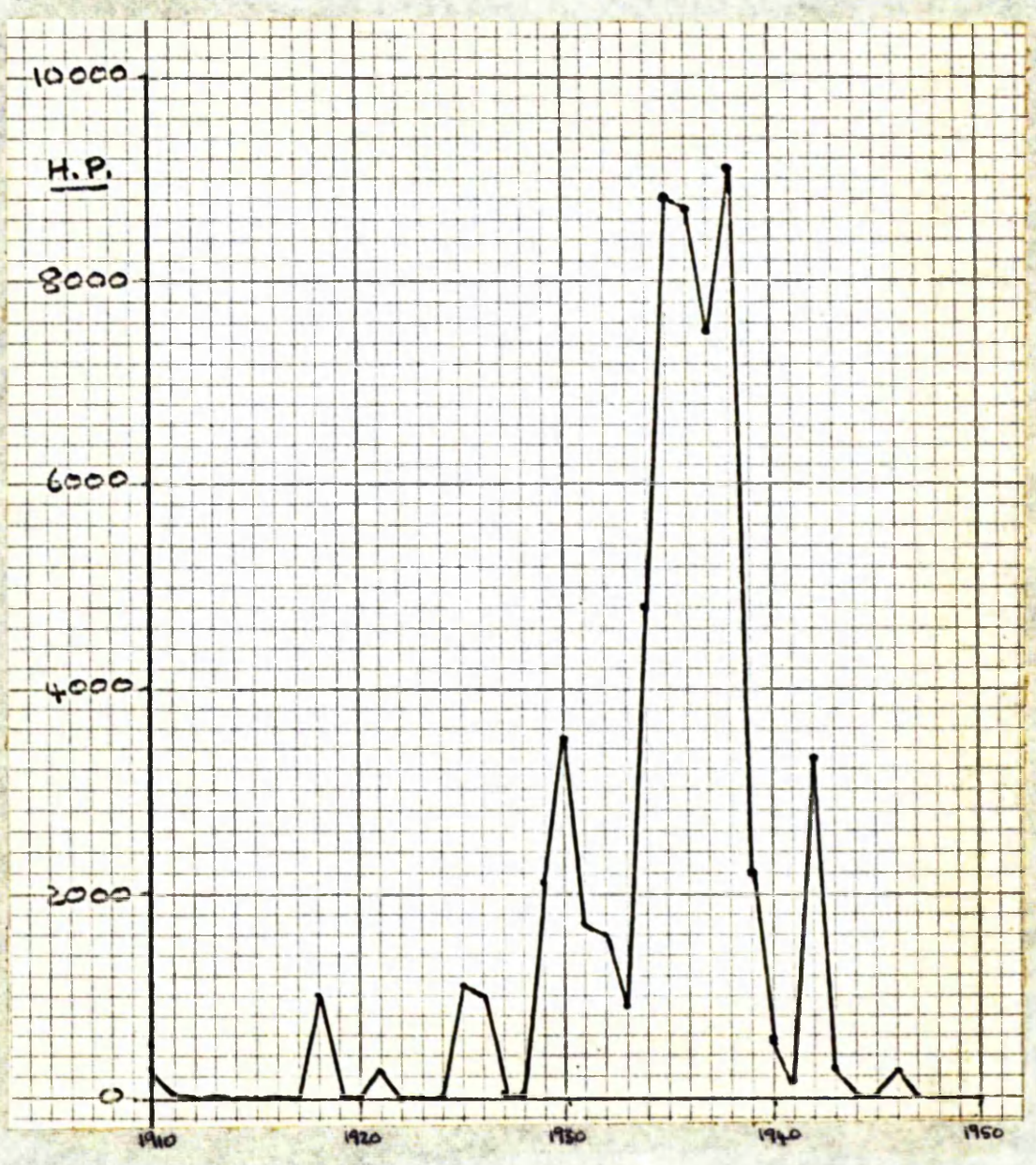
Source: Table 11-2.

Graph 11-2: Livestock Holdings, 1930-1960.



Sources: See text and notes to text.

Graph 11-3: Annual Additions to Installed Horsepower in Manufacturing Industry, 1910-1947.



Source: Table 11-6.

Notes

1. United Nations, Statistical Office, 'International Standard Industrial Classificiation of All Economic Activities', Statistical Papers, Series M, No.4, Rev. 1, New York, 1958.

2. For a discussion of these methods, see Chapter 3, above.

3. Hooley, R.W., 'The Measurement of Capital Formation in Under-developed Countries', in The Review of Economics and Statistics, July 1967, p.201.

4. Hashim, J.M., 'Capital Formation in Iraq, 1957-1962', London University Ph.D. Thesis, unpublished, 1966, p.181.

5. See discussion in Chapter 4, above.

6. Based on discussion in Hoselitz, B.F., 'Capital Formation in Indian Agricultural Society', in Firth, R., and Yamey, B.S. (eds.) 'Capital, Credit and Saving in Peasant Societies', (Chicago, 1964).

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10. Ibid., pp.260-277. My visits to villages in many parts of Iran in the period 1959-67 confirmed this statement. Further confirmation was given by Brooks, D., based on research for an Oxford University Ph.D.

11. This figure is based on various reports by the Indian Army, consulted in the India Office Library, London.

12. Yaganegi, E.B., 'Recent Financial and Monetary History of Persia', New York, 1934, p.4.

13. This figure is based on a total of 2.5 million farm families given in Overseas Consultants Inc., 'Report on Seven Year Development Plan for the Plan Organiz-

ation of the Imperial Government of Iran', New York, 1949, Vol.3, p.10.

14. Iran, Ministry of Interior, Public Statistics Department, 'National and Province Statistics of the First Census of Iran; November 1956', Vol.2, Tehran, 1962, p.342, (male).

15. Iranian Statistical Center, 'National Census of Population and Housing, November 1966', Vol.168, p.68, (male).

16. United Kingdom, Foreign Office, Historical Section, 'Persia', Confidential Handbook, London, 1919, p.94; also Mikdashi, Z., 'A Financial Analysis of Oil Concessions in Persia, Iraq, Saudi Arabia and Kuwait since 1900', Thesis submitted for D. Phil., Oxford University, 1965, p.36.

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19. See Bharier, J., 'Banking and Economic Development in Iran', in Bankers Magazine, December 1967, p.297, reprinted as Appendix H.

20. Iran, Plan Organization, 'Historical Review, 1955-1958', Tehran, (1959?), p.13.

21. This information was obtained privately from a major importer of agricultural goods in Iran in an interview, January 5, 1967. It was confirmed by the Sales Manager of Fewsters, of Newcastle, in telephone conversation, December 15, 1968.

22. Pahlavi, M.R., 'Mission for My Country', London, 1961, pp.42-4. Also Simmonds, S., 'Economic Conditions in Iran', London, 1935, p.3. However, some minor advances in agriculture are noted by Simmonds on page 31 of the same source.

23. This figure was traced by means of the list of imports of goods made by the Anglo-Iranian Oil Company in the Foreign Trade Statistics of Iran for the relevant year.

24. Longrigg, S.H., 'Oil in the Middle East', Oxford University Press, London, 1954, p.65.

25. Spence, C.C., 'Report to the Government of Iran on Farming Potentials for Irrigation in Khuzistan', F.A.O. Report 451, Rome, 1956, p.21.

26. Overseas Consultants Inc., op. cit., Vol.2, pp.13-14.

27. In the Third Plan, for example, this type of capital formation was left to the private sector even though there had been little evidence that this sector was willing to undertake it. In fact, the private sector did not fulfil its expectations. See Iran, Plan Organization, 'Third Plan Frame - Agriculture', Tehran, 1961, p.10. Also Iran, Plan Organization, 'Fourth National Development Plan, 1968-1972', Tehran, 1968, p.89.

28. Fisher, B., 'Irrigation Systems of Persia', in American Geographical Review, Vol. XVIII, 1928, pp.302-306; Noel, E., 'Qanats', in Journal of the Royal Central Asian Society, Vol. XXXI, 1948, pp.191-202; Beckett, P., 'Qanats around Kerman', in Journal of the Royal Central Asian Society, Vol. XL, 1953, pp.47-58; and others.

29. Fisher, B., op. cit., p.304; Noel, E., op. cit., p.195; Overseas Consultants Inc., op. cit., Vol.3, p.150.

30. Maintenance of qanats is, perhaps the most important element in the longevity estimate. However, the type of life-span quoted has been confirmed by Dr. P. Beaumont, a hydrologist who is presently completing research into qanats in Iran.

31. It was not just economic considerations that led to a decline in the building of new qanats. The introduction of pump wells played a large part in lowering the underground water table in many areas, thus making the qanats in these areas obsolete.

32. This is based on the population total for 1900, given in Appendix A, the rural/urban division quoted in Chapter 8, and estimates of the nomadic population and the average size of villages from India Office sources.

33. Iran, Ministry of Interior, op. cit., p.12. A village is defined for the purposes of this chapter as a place containing 50-4999 inhabitants.

34. Figure based on data in Iranian Statistical Center, op. cit., tables referring to household use of water.

35. The range about this mean is indeterminate.

36. Noel, E., op. cit.; Noel bases his estimates on pre-war rials which were of considerably lower value than those of the early 1930s.

37. No evidence on this point is available except a subjective generalization based on my travels throughout Iran.

38. Many pumps are imported by households, and these are included with agricultural pumps in the Foreign Trade Statistics.

39. Lambton, A.K.S., op. cit., p.228.

40. Iran, Plan Organization, 'Fourth ....', op. cit., p.147.

41. Lambton, A.K.S., 'Land Reform and Rural Cooperatives in Iran', lecture given to the Royal Central Asian Society, December 11, 1968.

42. Iran, Plan Organization, 'Fourth ....', op. cit., p.147. This is also confirmed by the hydrologist, Dr. P. Beaumont, who has travelled widely in the qanat-using areas of Iran.

43. This assumption is based on my discussions with many persons in all parts of Iran.

44. See Appendix A.

45. This assertion is based on a cursory survey of the Iranian Foreign Trade Statistics since 1900.

46. See particularly the studies by Atai, M., in 'Tahghighat-e-Eqtesadi', published by the University of Tehran. This is confirmed by Johnson, S.E., 'Rural Development in Iran as Affected by Land Reform', Tehran, unpublished, 1963, p.5.

47. Increased yields per hectare may be regarded as depending on the increased use of capital goods, on the use of fertilizers or better seeds, or on the efficiency of farmers. None of these three variables appears to have altered significantly in the period under study.

48. Information from discussion with Professor A.K.S. Lambton, of the School of Oriental and Afridan Studies, University of London.

49. See relevant data in Ohlin, G., 'Population Control and Economic Development, Paris, 1967, p.38.

50. Information from F. Tommelein, member of the Agricultural Extension Service in Iran, in interview October 20, 1966.

51. Data from the following sources: Iran, Ministry of Interior, Department of Agricultural Statistics, 'First National Census of Agriculture, October 1960', Vol. XV, 'National Summary Report', Tehran, 1964?; Encyclopaedia Britannica (1962), Vol. 17, 'Persia', p.588; United Kingdom, Admiralty, Naval Intelligence Division, 'Persia', London, 1945, restricted, p.45●.

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53. Ibid., p.3.

54. Iran, Plan Organization, 'Third Plan Frame - Agriculture', Tehran, 1961, p.54.

55. Avery, P., 'Iran 1964-8: The Mood of Growing Confidence', in The World Today, November 1968, p.461.

56. Iran, Plan Organization, 'Fourth National ....', op. cit., p.90.

57. Glaue, O., 'Forst und Holzwirtschaft in Persien', Internationaler Holzmarkt, Wien, 1950, p.28, quoted in Glaser, H.A.M., op. cit., p.11.

58. Glaser, H.A.M., op. cit., p.11.

59. Iran, Plan Organization 'Third Plan ....', op. cit., p.53.

60. Administrator General of the Finances of Persia, 'Quarterly Report, No.6', Tehran, 1924, p.97. It is stated in this report that trees were cut down and used as fuel on the Tabriz-Julfa railway.

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62. Data from the final accounts of the Plan Organization for the year 1344 (1965). These are unpublished and were obtained from the Finance Bureau.

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66. Reports of 1968 Fisheries Conference in Tehran, reported in the daily English language newspaper, Tehran Journal.

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68. Ibid., p.1.

69. Iran, Plan Organization, Bureau of Statistics, 'Statistical Handbook of Iran', Tehran, 1966, pp.116-118.

70. Fibiger, H., and Frederiksen, K., op. cit., p.6.

71. Ibid., p.6.

72. Ibid., pp.6-11; Estimates from these pages are compared with G.D.F.C.F. totals in Chapter 5, above.

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74. Yaganegi estimates 'total investment' in 1916 as nine million roubles.

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76. Ibid., p.1.

77. Ibid., p.1.

78. Data from the Iranian Foreign Trade Statistics, sections on imports of goods by exempt organizations, for the relevant years.

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80. Bank Markazi Iran, 'National Income of Iran, 1959-1965', Tehran, 1968, p.84.

81. International Engineering Co. Inc., op. cit., p.38; Also Yaganegi, E.B., op. cit., p.8.

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88. Overseas Consultants Inc., op. cit., pp.173 ff.

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90. See Iran, Plan Organization, 'Third Plan Frame - Industry and Mining', Tehran, 1961, p.93.

91. Bank Markazi Iran, 'Changing Trends in Iranian Companies' Tehran, persian, unpublished, 1965, p.124.

92. Information from Mr. Lesmeister; see note 84, above.

93. Iran, Plan Organization, 'Fourth National ....', op. cit., p.120, implies this. Lesmeister confirmed this; see note 84, above.

94. Data from Annual Accounts and Balance Sheet of Anglo-Persian (Anglo-Iranian) Oil Company, filed at the Board of Trade. Figures for extra depreciation are shown so that, on the assumption that regular depreciation methods were the same throughout the period, an approximation to gross capital formation can be calculated.

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101. Banani, A., 'The Modernization of Iran', Stanford, 1961, pp.137 ff.

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103. Iran, Ministry of Economy, 'Annual Industrial Survey of Iran', for 1963/4/5, Tehran.

104. This assertion is based on Table 5-1 and Table 11-8.

105. No industrial survey of any type appears to have been made between 1948 and 1954. Surveys carried out by the Ministry of Industries and Mines from 1955 are considered to be of no value following discussions with Eng. A.S. Shaheen, who was concerned with their production.

106. Assertion based on my own observation in all parts of Iran, and confirmed for previous periods by discussions with builders, architects and personal contacts.

107. Information from Hossein Meymar of Tehran, in conversation June 7, 1967.

108. It is rare for buildings of five stories and under to use cranes, or even a block and tackle. The workers carry almost all materials in small hods.

109. Iran, Ministry of Interior, General Department of Public Statistics, 'Report on the Industrial Census of Iran: August 1963', Series I.3, Chapter (Vol.) 21. 'Construction', Tehran, 1965, Persian, p.3.

110. The informal methods of hiring, firing and arranging

transport and accounts is discussed by W.H. Bartsch in his forthcoming Ph.D. thesis for London University.

111. This 'surprising' assertion is explained by the extensive methods of construction employed in Iranian cities and the need of construction companies to have offices in the centre of town.

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114. Simmonds, S., op. cit., p.37.

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117. Ibid., p.28.

118. Bank Markazi Iran, 'Investors Guide to Iran', Tehran, 1966, p.79.

119. De Lorey, E., and Sladen, D., 'Queer Things about Persia', London, 1907, p.53.

120. Iran, Plan Organization, 'Fourth National ....', op. cit., p.138.

121. Ibid., p.242.

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123. These data were extracted from the 'exempt organizations' section of the trade statistics for the relevant years.

124. Based on information in Iran, Plan Organization, 'Fourth ....', op. cit., pp.146 ff.

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126. United Kingdom, Foreign Office, op. cit., pp.69-70.

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131. Ibid., p.15.

132. Details of this plan are given in League of Nations, op. cit., p.29, and also in Sventitski, A.S., 'Transport Routes in Persia', in Journal of the Royal Central Asian Society, 1928, p.222.

133. Lingeman, E.R., 'Report on the Finance and Commerce of Persia 1925-1927', Department of Overseas Trade, London, 1928, p.25.

134. Agah, M., op. cit., p.15.

135. Vail Motter, T.H., 'The Persian Corridor and Aid to Russia', Office of the Chief of Military History, Department of the Army, Washington, D.C., 1952.

136. International Engineering Company Inc., op. cit., p.167 and p.184. See also interesting comments by Lambton, A.K.S., 'Persia', in Journal of the Royal Central Asian Society, 1944, p.20.

137. Zipkes, E., 'Draft Final Report on Road Construction and Maintenance', Tehran, 1962, Figure 4.

138. That is, in the period 1954-1965 it is likely that the two trends ran together. This does not mean a general relationship exists between the two variables.

139. Overseas Consultants Inc., op. cit., Vol.4, p.27.

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142. Based on data in Laubert, R., 'Draft Final Report on Road Engineering and Construction', Tehran, 1962, Annex B.

143. Information from economists in Planning Bureau of the Plan Organization, in various discussions, 1966-1967.

144. Iran, Plan Organization, 'Third Plan Frame - Transport and Communications', Tehran, 1961, p.34.

145. This is based on rough estimates of expenditure on capital formation by the railways compared with the G.D.F.C.F. data given in Chapter 5.

146. See discussion in Iran, Plan Organization, Economic Bureau, op. cit., pp.49-50.

147. Williamson, J.W., op. cit., p.25.

148. The navigation line on Lake Rezaieh (Urumieh) was government owned in the 1920s. See Millspaugh, A.C., 'The Financial ....', op. cit., p.36. See also Kayhan International, July 1967, for reports of extensions to this line and the facilities of the lake.

149. Bank Markazi Iran, 'Investors Guide ....', op. cit., pp.92-93.

150. Overseas Consultants Inc., op. cit., Vol.4, p.8.

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153. Yaganegi, E.B., op. cit., pp.18-19.

154. Iran, Telegraph Office, 'About Iran's Telegraph System', Tehran, 1920, persian, pp.58-69.

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156. Iran, Plan Organization, 'Fourth National ....', op. cit., p.216.

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158. Hadow, R.H., 1925, op. cit., p.32.

159. International Engineering Company Inc., op. cit., p.34.

160. Iran, Plan Organization, 'Fourth National ....', op. cit., pp.215 ff.

161. Some data on the early period is given in Fateh, M.K., op. cit., p.54.

162. This assertion is based on my own observations in Iran.

163. Almost all the major bottled-gas companies now have their own delivery service. This from discussions with various officials of Irangas, Butagas, and Persigas in Tehran.

164. Over 80 per cent of the total registered trucks in Iran in 1960 belonged to hire companies. See Zipkes, E., op. cit., Figure 4.

165. This assertion is based on my own observations in Iran.

166. This assertion is based on my own observations and discussions with numerous shopkeepers and other people in Iran.

167. Based on Figures in Bank Markazi Iran, 'Changing Trends ....', op. cit., p.124.

168. Bharier, J., op. cit., pp.295 ff.

169. This is particularly true of bank branches, and is based on my discussions with Iranian bankers.

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171. Imperial Bank of Iran, 'Minutes of Ordinary General Meetings, 1890-1951', bound but unpublished, made available by the Secretary of the British Bank of the Middle East.

172. Iran, Ministry of Foreign Affairs, 'Banking in Iran', pamphlet no. 10, p.3.

173. Banque Nationale de Perse, 'Bilan', Tehran, 1932, section on bank branches.

174. Bank Melli Iran, 'Balance Sheet', 1948 and following years.

175. Known as the Bank Markazi Iran; founded in 1960 when the central banking functions of the Bank Melli Iran were separated from its commercial functions. See Bharier, J., op. cit., p.301.

176. This questionnaire had been prepared and presented to the Economic Research Bureau of the Bank on the suggestion of the Deputy Director, but was later objected to by members of the Research Bureau on grounds which were unexplained.

177. Europa Publications, 'The Middle East and North Africa', 1968, section on financial institutions in Iran.

178. Although a considerable number of money lenders and money changers have been in business in Iran in the period under study, I have observed that their capital equipment is restricted to a desk, a few chairs and a safe.

179. Information in this paragraph is based on my informal discussions with Iranian schoolteachers, and in particular with my wife.

180. Brolin, K-G., 'The Reorganization of the Educational Statistics in Iran', Tehran, 1959, p.17.

181. This can be seen from the number of schools in the country compared with the number of dwellings estimated in Chapter 8.

182. Iran, Plan Organization, 'Third Plan Frame - Health', Tehran, 1961, p.16.

183. In 1966, there were 80 cinemas in Tehran and 140 in the provinces. See United Kingdom, Board of Trade, 'Hints for Businessmen Visiting Iran', London, 1966?, p.37.

184. This is based on my own observations and discussions in Iran.

185. See discussion in section on agriculture, above.

186. Banani, A., op. cit., pp.143 for discussion of public construction and urban development.

187. Based on my own observations in Iran.

188. Where imported equipment is used this will have been included in the figures of Chapter 6. A rough guess would put the proportion of such imports by these establishments at well under five per cent.

189. This implies that capital formation in items other than buildings has been insignificant, and there is no evidence to disprove this.

190. See discussion of budgetary procedure in Balfour, J.M., 'Recent Happenings in Persia', London, 1922, pp.137 ff.

191. Overseas Consultants Inc., op. cit., pp. 239 ff.

192. See Chapter 8, above.

APPENDICES AND

BIBLIOGRAPHY

A P P E N D I X A

THE POPULATION OF IRAN

1900-1966

See published paper
'A Note on the Population of
Iran 1900-1966'
at the back of this volume.

A P P E N D I X B

URBAN POPULATION IN 1900

Urban Places of 1900

(Population in 000)

Town	Pop.	Town	Pop.
Abadeh	6	Khorasgan	9
Amol	18	Khorramabad	10
Ardabil	10	Khorramshahr	5
Ardikhan	15	Khosrowshah	5
Ardestan	10	Kurbal	10
*Astarabad	6	KurdKoy	6
*Bahramabad	5	Lahijan	5
Bam	13	Lar	8
Bandar Abass	5	Lingeh	15
*Barfrush	40	Lingerood	5
Behbahan	20	Mahallat	9
*Bijar	12	Malayer	5
*Bijistan	6	Maragheh	15
Birjand	24	Marand	15
Bojnord	10	Mashad	75
Borazjan	6	Miandoab	10
Borujerd	17	Mianeh	7
Bushire	15	Minab	10
Dair	5	Nahavand	12
Damghan	15	Nain	5
Darab	6	Neyriz	10
Dargaz	5	Nishapur	12
Dashtak	5	Radkan	18
Dezful	16	Ramhormoz	8
Esfahan	100	Rasht	40
Fahraj	12	Ravar	8
Fidifan	6	Rezaieh	35
Ghaen	12	Sabzevar	15
Ghazvin	40	Saghez	18
Ghom	20	Sanandaj	32
*Ghomisheh	8	Sari	8
Ghoochan	10	*Sauj Bulagh	15
Golpaygan	20	Saveh	8
Hamadan	50	Semnan	25
Harsin	10	Shahr-i-Babak	9
Jahrom	10	Shahrood	5
*Kakh	6	Shahsavar	35
Kangavar	8	Shiraz	60
Kashan	30	Shirvan	10
Kazeroon	6	Shushtar	20
Kerman	60	Sib	6
Kermanshah	60	Sirjan	9
Khoi	60	Songhor	9
Khonsar	10	*Sultanabad	7

Urban Places of 1900

(Population in 000)

Town	Pop.	Town	Pop.
Surmagh	6	Torbat Heydari	14
Tabas	7	*Turshiz	6
Taft	5	Varzaneh	5
Tabriz	200	Yamchi	6
Tehran	220	Yazd	75
*Tirhan	6	Zanjan	20

Source: J. Bharier from travel books, gazetters, maps, etc.

Note: Places marked * have since changed their names. New names are:

Astarabad	-	Gorgan
Bahramabad	-	Rafsanjan
Barfrush	-	Babol
Bijar	-	Garrous
Bijistan	-	Ferdows
Ghomisheh	-	Shah Reza
Kakh	-	Kakhak
Sauj Bulagh	-	Mahabad
Sultanabad	-	Arak
Tirhan	-	Tiran
Turshiz	-	Kashmar

A P P E N D I X C

TARIFF NUMBERS (AND MARK-UP PERCENTAGES) used in the estimation of G.D.F.C.F. in Imported Capital Goods.

A complete list of the tariff numbers used, and the distribution, installation and exclusions percentages applied to the c.i.f. values of these tariff numbers, for each of the ten different periods of tariff classication from 1900-1965, is presented in this Appendix.

For ease of presentation a simple coding system is used:

Symbol	A	B	C	D	E	F	G	H	J	K
Percentage	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%

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1. Tariff Numbers and Percentages, 1900-1902

Tar. No.	Dist.	Inst.	Excl.	Tar. no.	Dist.	Inst.	Excl.
27	F	A	F	32c	F	A	F
28	F	A	F	32g	F	A	F
30b	F	A	K	33	F	A	F
31d	F	A	K	57a	F	A	C
32a	F	A	F	57b	F	A	C

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2. Tariff Numbers and Percentages, 1903-1919

17	F	A	A	21/2f	F	A	K
19/1h	F	A	F	21/2h	F	A	A
19/1i	F	A	F	21/2r	F	A	C
19/1j	F	A	A	21/2t	F	A	K
19/1k	F	A	A	21/2u	F	A	K
19/2b	F	A	F	21/2v	F	A	F
19/2c	F	A	F	21/2w	F	A	K
19/3d	F	A	F	22/1a	F	A	H
19/3e	F	A	F	22/1b	F	A	H
19/3f	F	A	F	24	F	A	A
19/3g	F	A	F	42/1	F	A	A
19/3h	F	A	F	42/2a	F	A	A
19/5c	F	A	F	42/2b	F	A	C
21/1a	F	A	F	42/2c	F	A	C
21/2b	F	A	C	42/2d	F	A	C
21/2d	F	A	C	42/2e	F	A	C
21/2e	F	A	C				

Tar. No.	Dist.	Inst.	Excl.	Tar. No.	Dist.	Inst.	Excl.

3. Tariff Numbers and Percentages, 1920-1927

8/4	F	A	J	29u	F	A	J
23	F	A	A	30b	F	A	H
25/1	F	A	A	31c	F	A	J
25/2a	F	C	A	31f	F	A	J
25/2b	F	C	A	33/1	F	A	A
25/2c	F	C	A	33/2	F	A	A
25/2d	F	C	A	33/3	F	A	A
25/2e	F	C	A	33/4	F	A	A
25/2f	F	C	A	33/5	F	A	A
29b	F	A	J	51/1a	F	A	A
29c	F	A	J	51/1b	F	A	A
29d	F	A	J	51/1c	F	A	A
29e	F	A	J	51/1d	F	A	A
29f	F	A	J	51/2a	F	A	C
29g	F	A	J	51/2b	F	A	C
29k	F	A	J	51/2c	F	A	C
29r	F	A	J	51/2d	F	A	C
29s	F	A	J	51/3a	F	A	C
29t	F	A	J	51/3b	F	A	C

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4. Tariff Numbers and Percentages, 1928-1932

2	F	A	A	293	F	A	K
54	F	A	C	301	F	A	H
175	F	A	A	310	F	F	A
176	F	A	A	312	F	A	F
177	F	C	A	347	F	A	A
178	F	C	A	348	F	A	A
179	F	D	A	349	F	A	A
180	F	D	A	350	F	A	A
181	F	C	A	440	F	A	A
182	F	C	A	441	F	A	A
183	F	C	C	442	F	A	A
184	F	C	A	443	F	A	A
277	F	C	F	444	F	A	J
277b	F	C	F	445	F	A	C
278	F	A	C	446	F	A	C
279a	F	B	C	447	F	A	C
279b	F	B	C	448	F	A	C
280	F	A	F	449	F	A	C
288	F	A	F	450	F	A	C
292	F	A	K	451	F	A	C

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5. Tariff Numbers and Percentages, 1933-1935

Tar. No.	Dist.	Inst.	Excl.	Tar. No.	Dist.	Inst.	Excl.
39	E	A	A	329	E	C	A
137	E	A	K	330	E	C	A
138	E	A	K	331	E	C	C
139	E	A	K	332	E	C	A
140	E	A	K	333	E	D	A
141	E	A	K	334	E	D	A
145	E	C	F	335	E	D	A
146	E	C	F	336	E	D	A
151	E	B	C	337	E	C	C
152	E	C	F	338	E	D	A
155	E	B	C	339	E	C	A
158	E	A	F	458	E	A	H
159	E	A	F	523	E	F	A
163	E	A	K	698	E	A	A
167	E	A	F	699	E	A	A
169	E	A	F	700	E	A	A
178	E	A	C	701	E	A	A
278	E	A	A	702	E	A	J
279	E	A	A	703	E	A	J
303	E	A	C	704	E	A	C
318	E	A	A	705	E	A	C
319	E	A	A	706	E	A	C
320	E	A	A	707	E	A	C
321	E	A	A	708	E	A	C
325	E	A	A	709	E	A	C
326	E	C	A	710	E	A	C
327	E	C	C	711	E	A	C
328	E	C	A				

6. Tariff Numbers and Percentages, 1936-1940

Tar. No.	Dist.	Inst.	Excl.	Tar. No.	Dist.	Inst.	Excl.
593	E	A	K	924	E	A	A
594	E	A	K	942	E	A	A
595-6	E	C	A	943	E	A	J
602	E	F	A	944	E	D	A
605-7	E	B	J	945-6	E	D	A
609	E	A	K	947-50	E	D	A
610	E	A	K	951	E	A	F
611	E	A	A	952-3	E	A	A
612	E	A	K	954	E	C	A
621	E	A	A	955	E	D	A
638	E	A	D	956-9	E	D	A
639	E	A	A	960	E	B	A
640	E	A	D	961	E	B	A
750	E	A	A	962-3	E	A	K
757	E	A	K	965	E	A	K
800	E	A	A	967-9	E	A	D
801	E	A	A	988-90	E	A	K
805	E	A	A	991	E	A	A
806	E	A	A	992	E	A	A
807	E	A	A	993-5	E	A	A
808	E	A	A	996	E	A	A
826	E	C	A	997	E	A	A
827	E	C	A	998	E	A	A
842	E	C	A	999	E	A	A
843	E	C	A	1000	E	A	A
844	E	C	A	1018-9	E	A	K
849	E	B	F	1027	E	A	A
850	E	A	A	1028	E	A	A
851	E	A	A	1029-30	E	A	A
852	E	A	A	1031	E	A	A
853	E	A	A	1033	E	A	A
856-7	E	A	A	1034	E	A	A
858-60	E	A	K	1035	E	A	F
868-9	E	A	K	1036	E	A	A
870	E	A	K	1037-8	E	A	F
873	E	A	K	1039-41	E	A	A
875-6	E	A	F	1042-4	E	A	F
879	E	A	K	1047	E	A	A
885a	E	A	F	1048	E	A	A
886	E	A	A	1049	E	A	A
887-8	E	B	F	1051-2	E	B	A
889-90	E	B	J	1053-4	E	B	A
892	E	A	F	1055-6	E	B	A
892a	E	A	F	1057-8	E	B	A
893-4a	E	A	F	1059-60	E	B	A
909	E	A	A				

7. Tariff Numbers and Percentages, 1941-1949

Tar. No.	Dist.	Inst.	Excl.	Tar. No.	Dist.	Inst.	Excl.
665	E	A	A	1562	E	A	A
666	E	A	A	1564-7	E	A	A
841	E	A	A	1568-9	E	A	A
842	E	A	A	1570-1	E	A	A
843	E	A	D	1572	E	A	A
881	E	C	A	1573-5	E	A	A
896	E	F	A	1576-7	E	A	A
900	E	A	K	1576-7	E	A	A
901	E	A	K	1578-9	E	A	A
904	E	B	J	1600	E	A	A
905	E	B	J	1610	E	B	F
1364	E	A	F	1611	E	B	F
1365	E	A	F	1612	E	B	F
1366	E	A	F	1613	E	A	K
1393	E	B	F	1631	E	A	A
1428	E	A	A	1632	E	A	K
1494	E	C	A	1661-7	E	A	K
1495	E	C	A	1668	E	A	K
1496	E	C	A	1679	E	A	A
1497	E	C	A	1680-2	E	A	K
1498	E	C	A	1683	E	A	K
1499	E	C	A	1684	E	A	K
1500	E	F	A	1685-9	E	A	K
1501	E	C	A	1690-5	E	A	K
1502	E	A	A	1696-1701	E	A	K
1503	E	A	A	1701-6	E	A	K
1538	E	B	F	1713	E	A	A
1539	E	B	F	1714	E	A	A
1540	E	B	F	1715	E	A	A
1541	E	B	F	1721	E	A	A
1542	E	B	F	1724-5	E	A	A
1543	E	B	F	1726	E	A	A
1544	E	B	J	1727	E	A	F
1545	E	B	J	1740	E	D	A
1551	E	A	A	1741-3	E	D	A
1552	E	A	A	1744-5	E	D	A
1553	E	A	A	1746-52	E	D	A
1554	E	A	A	1753-8	E	D	A
1555	E	A	A	1759-64	E	D	A
1556	E	A	A	1765	E	D	A
1557	E	A	A	1766-70	E	D	A
1558	E	A	A	1771-6	E	J	A
1559	E	A	A	1777-82	E	D	A
1560	E	A	A	1783-4	E	D	A
1561	E	A	A	1785-8	E	D	A

Tar. No.	Dist.	Inst.	Excl.	Tar. No.	Dist.	Inst.	Excl.
1789	E	D	A	1915-6	E	B	A
1790-3	E	D	A	1917	E	B	A
1794-8	E	D	A	1918	E	B	A
1799	E	C	A	1919	E	B	A
1800	E	C	A	1920	E	B	A
1801	E	C	A	1921-2	E	B	A
1802	E	C	A	1940-5	E	B	A
1803	E	C	A	1946	E	B	A
1804-13	E	C	A	1947	E	B	A
1814-17	E	B	F	1948	E	B	A
1818	E	A	A	1949	E	B	A
1819-22	E	C	A	1950	E	B	A
1823-27	E	C	A	1951	E	B	A
1828	E	C	A	1952	E	B	A
1829	E	C	A	1953	E	B	A
1830-3	E	C	A	1954	E	B	A
1834	E	C	A	1955	E	B	A
1835	E	C	A	1956	E	B	A
1836	E	C	A	1957-60	E	B	A
1837	E	C	A	1961	E	D	A
1838	E	A	F	1962	E	A	A
1839	E	A	F	1963-5	E	A	F
1840	E	A	F	1966	E	A	A
1841	E	A	F	1967	E	A	A
1842	E	A	F	1968-71	E	A	A
1843	E	C	A	1972	E	A	A
1844	E	C	A	1973	E	A	F
1845-50	E	C	A	1974	E	A	F
1851-2	E	C	A	1975	E	A	F
1853-7	E	A	A	1976	E	A	A
1858-60	E	A	A	1977	E	A	A
1861-2	E	A	A	1978	E	A	A
1863	E	A	A	1979	E	A	A
1864	E	A	A	1980	E	A	A
1865-73	E	A	D	1981-2	E	A	A
1882-90	E	B	A	1984-9	E	A	A
1891	E	D	A	1990	E	A	A
1892	E	A	F	1991	E	A	A
1893	E	A	F	1992	E	A	A
1894-5	E	A	D	1993-4	E	A	A
1896	E	A	D	1995	E	A	A
1897	E	A	D	2004	E	A	A
1898	E	B	A	2005	E	A	A
1899	E	A	D	2006	E	A	A
1900-1	E	B	A	2007	E	A	A
1902-6	E	A	D	2008	E	A	A
1908-9	E	A	A	2009	E	A	A
1911-14	E	A	K	2010	E	A	A

Tar. No.	Dist.	Inst.	Excl.	Tar. No.	Dist.	Inst.	Excl.
2011	E	A	A				
2012	E	A	A				
2013	E	A	A				
2014	E	A	A				
2015	E	A	A				
2016	E	A	A				
2017	E	A	A				
2018	E	A	A				
2019	E	A	A				
2020	E	A	A				
2021	E	A	A				
2022	E	A	A				
2023	E	A	A				
2024-8	E	A	A				
2029	E	A	A				
2030	E	A	A				
2031	E	A	A				
2032	E	A	A				
2033	E	A	A				
2034	E	A	A				
2035	E	A	A				
2036	E	A	A				
2050	E	A	A				
2051	E	A	A				
2052	E	A	A				
2053	E	A	A				
2054	E	A	A				
2055	E	A	A				
2056	E	A	A				
2067	E	A	A				
2137-41	E	A	A				

8. Tariff Numbers and Percentages, 1950-1959

Tar. No.	Dist.	Inst.	Excl.	Tar. No.	Dist.	Inst.	Excl.
294C	D	A	A	741	C	A	A
D	D	A	A	742	C	A	A
375A	D	A	A	743	C	A	A
B1	D	A	F	744A	C	A	A
B2	D	A	F	B	C	A	A
B3	D	A	A	745	C	A	A
C1	D	A	F	746	C	A	A
C2	D	A	F	747	C	A	A
C3	D	A	A	748A	C	A	A
385	C	C	A	B	C	A	A
400A	D	A	K	D	C	A	A
B	D	A	K	750A	C	A	A
402	E	B	J	B	C	A	A
403	E	B	J	751A1	C	A	A
632A	D	A	F	A2	C	A	A
B	D	A	F	B	C	A	A
633	D	A	F	C	C	A	A
634	D	A	F	D	C	A	A
654	D	C	A	763	C	A	A
656	D	C	F	768A	D	B	F
673A	E	A	A	B	D	B	F
B	E	A	A	781	D	A	K
C	E	A	A	782	D	A	K
674	E	A	A	802A	D	A	K
713	C	C	A	B1	D	A	K
714	C	C	A	B2	D	A	K
715	C	C	A	B3	D	A	K
716	C	C	A	803	D	A	K
717	C	C	A	807	D	A	K
718	C	C	A	808A	D	A	K
719	C	F	A	B1	D	A	K
720	C	C	A	B2	D	A	K
721	C	A	A	C1	D	A	K
722	C	A	A	C2	D	A	K
735A	D	B	F	C3	D	A	K
B1	D	B	F	C4	D	A	K
B2	D	B	F	809A	D	A	K
736	D	B	F	B	D	A	K
737A	D	B	F	810A	D	A	K
B1	D	B	F	B	D	A	K
B2	D	B	F	C	D	A	K
738	C	A	F	D	D	A	K
739A	E	B	A	812A	C	A	A
B	E	B	J	B	C	A	A
740(A-E)	D	A	K	D1	C	A	A

Tar. No.	Dist.	Inst.	Excl.	Tar. No.	Dist.	Inst.	Excl.
812D3	C	A	A	836B3	D	C	A
814A	C	A	A	837	D	C	A
B	C	A	A	838A	D	C	A
815A	C	A	A	B	D	B	F
B	C	A	A	839A	D	B	F
816A	C	A	F	B1	D	B	A
B	C	A	F	B2	D	B	A
820A	D	D	A	B3	D	B	A
B	D	D	A	840A	D	C	A
C	D	D	A	B	D	C	A
D	D	D	A	C	D	C	A
821A	D	D	A	841	D	C	A
B	D	D	A	842A	D	C	A
822A	D	D	A	B	D	C	A
B	D	D	A	843A	D	C	A
823A1	D	D	A	B	D	C	A
A2	D	D	A	844A	D	C	A
A3	D	D	A	B	D	C	A
A4	D	D	A	C	D	C	A
B	D	D	A	845A	D	C	A
824A	D	D	A	B	D	C	A
B	D	D	A	C	D	C	A
825	D	D	A	D	D	C	A
826	D	D	A	846A	D	C	A
827A	C	J	A	B	D	C	A
B1	C	J	A	C	D	C	A
B2	C	J	A	847A	D	A	F
B3/1	C	J	A	B	D	A	F
B3/2	C	J	A	C	D	A	F
828	C	D	A	D	D	A	F
829A	D	D	A	848A	D	C	A
B	D	D	A	B	D	C	A
830	D	D	A	849	D	C	A
831	D	D	A	850A	D	A	A
832A	D	D	A	B	D	A	A
B	D	D	A	C	D	A	A
833A	D	D	A	851A1	D	A	A
B	D	D	A	A2	D	A	A
834A	D	C	A	B	D	A	A
B	D	C	A	852A	D	A	A
835A	D	C	A	B	D	A	A
B	D	C	A	C	D	A	A
C	D	C	A	853	D	A	A
836A1	D	C	A	854A	D	A	D
A2	D	C	A	B	D	A	D
B1	D	C	A	857A	D	B	A
B2	D	C	A	B	D	B	A

Tar. No.	Dist.	Inst.	Excl.	Tar. No.	Dist.	Inst.	Excl.
857C	D	B	A	887D	D	B	A
D	D	B	A	888A	D	D	A
E	D	B	A	B	D	D	A
F	D	B	A	889	D	A	A
G	D	B	A	890A1	E	A	F
858	D	B	A	A2	E	A	F
859A	D	D	A	A3	E	A	F
B	D	D	A	B	E	A	A
861	D	A	D	C1	E	A	A
862	D	A	D	C2	E	A	A
863	D	B	A	D	E	A	A
864	D	B	A	E1	E	A	A
865A	D	B	A	E2	E	A	A
B	D	A	F	891A	E	A	F
C	D	A	F	B	E	A	F
867A	E	A	A	C	E	A	F
B	E	A	A	D	E	A	F
868B	D	A	K	892A	E	A	F
C	D	A	K	B	E	A	F
D	D	A	K	893A	E	A	F
869A	D	B	A	B	E	A	F
B	D	B	A	894	E	A	F
C	D	B	A	895	E	A	F
870	D	B	A	896A	E	A	F
871A	D	B	A	B	E	A	F
B	D	B	A	897	E	A	A
C	D	B	A	898A	E	A	A
872A	D	B	A	B	E	A	A
B	D	B	A	899B	E	A	A
878	D	B	A	900A	D	A	A
879	D	B	A	B	D	A	A
880A	D	B	A	901A	D	A	A
B	D	B	A	B	D	A	A
C	D	B	A	902	D	A	A
881A	D	B	A	903	D	A	A
B	D	B	A	904	D	A	A
C	D	B	A	905A1	D	A	A
882A	D	B	A	A2	D	A	A
B	D	B	A	B	D	A	A
883	D	B	A	C	D	A	A
884	D	B	A	906A	D	A	A
885	D	B	A	B	D	A	A
886A	D	B	A	907	D	A	A
B	D	B	A	911A	E	A	A
887A	D	B	A	B	E	A	A
B	D	B	A	C	E	A	A
C	D	B	A	912A	E	A	A

Tar. No.	Dist.	Inst.	Excl.	Tar. No.	Dist.	Inst.	Excl.
912B	E	A	A				
C	E	A	A				
913A	E	A	A				
B	E	A	A				
C	E	A	A				
914A	E	A	A				
B	E	A	A				
C	E	A	A				
D	E	A	A				
915A	E	A	A				
B	E	A	A				
916	E	A	A				
917A1	E	A	A				
A2	E	A	A				
B	E	A	A				
C	E	A	A				

Tar. No.	Dist.	Inst.	Excl.	Tar. No.	Dist.	Inst.	Excl.

9. Tariff Numbers and Percentages, 1960-1963

294C	D	A	A	741	C	A	A
D	D	A	A	742	C	A	A
375A	D	A	A	743	C	A	A
B1	D	A	F	744A	C	A	A
B2	D	A	F	B	C	A	A
B3	D	A	A	745	C	A	A
B4	D	A	A	746	C	A	A
C1	D	A	F	747	C	A	A
C2	D	A	F	748A	C	A	A
C3	D	A	A	750	C	A	A
C4	D	A	A	751A1	C	A	A
385	C	C	A	A2	C	A	A
400A	D	A	K	B	C	A	A
B	D	A	K	C	C	A	A
402	E	B	J	D	C	A	A
403	E	B	J	763	C	A	A
632	D	A	F	767A	C	A	F
633	D	A	F	768A	D	B	F
634	D	A	F	B	D	B	F
654	D	C	A	781	D	A	K
656	D	C	F	782	D	A	K
673	E	A	A	802A	D	A	K
674	E	A	A	B1	D	A	K
713	C	C	A	B2	D	A	K
714	C	C	A	B3	D	A	K
715	C	C	A	803	D	A	A
716	C	C	A	807	D	A	K
717	C	C	A	808A	D	A	K
718	C	C	A	B1	D	A	K
719	C	F	A	B2	D	A	K
720	C	C	A	C1	D	A	K
721	C	A	A	C2	D	A	K
727	C	A	A	C3	D	A	K
735A	D	B	F	C4	D	A	K
B1	D	B	F	809A	D	A	K
B2	D	B	F	B	D	A	K
736	D	B	F	810A	D	A	K
737A	D	B	F	812A	C	A	A
B1	D	B	F	B	C	A	A
B2	D	B	F	D1	C	A	A
738A	C	A	F	D4	C	A	A
B	C	A	F	814A	C	A	A
739A	E	B	A	B	C	A	A
B	E	B	J	815A	C	A	A
740(A	D	A	K	B	C	A	A

Tar. No.	Dist.	Inst.	Excl.
816	C	A	F
820	D	D	A
821	D	D	A
822	D	D	A
823A1	D	D	A
A2	D	D	A
B	D	D	A
824	D	D	A
825	D	D	A
826	D	D	A
827A	C	J	A
B1	C	J	A
B2	C	J	A
B3/1	C	J	A
B3/2	C	J	A
828	C	D	A
829	D	D	A
830	D	D	A
831	D	D	A
832A	D	D	A
B1	D	D	A
B2	D	D	A
833A	D	D	A
B	D	D	A
834	D	C	A
835	D	C	A
836A	D	C	A
B	D	C	A
837	D	C	A
838A	D	C	A
B	D	B	F
839A	D	B	F
B1	D	B	A
B2	D	B	A
840	D	C	A
841	D	C	A
842	D	C	A
843	D	C	A
844	D	C	A
845	D	C	A
846	D	C	A
847A	D	A	F
B	D	A	F
C	D	A	F
848A	D	C	A
B1	D	C	A
B2	D	C	A
849A	D	C	A
B	D	C	A
850A	D	A	A
B	D	A	A
C	D	A	A
851	D	A	A
852	D	A	A
853	D	A	A
854A	D	A	D
B1	D	A	D
B2	D	A	D
857A	D	B	A
B	D	B	A
858	D	B	A
859	D	D	A
861	D	A	D
862A	D	A	D
B	D	A	D
863	D	B	A
864	D	B	A
865A	D	B	A
B	D	A	F
C	D	A	F
867	E	A	A
868B	D	A	K
C	D	A	K
D	D	A	K
869A	D	B	A
B	D	B	A
C	D	B	A
870	D	B	A
871A	D	B	A
B	D	B	A
C	D	B	A
872A	D	B	A
B	D	B	A
878	D	B	A
879	D	B	A
880	D	B	A
881	D	B	A
882	D	B	A
883	D	B	A
884	D	B	A
885	D	B	A
886	D	B	A
887	D	B	A
888	D	D	A

Tar. No.	Dist.	Inst.	Excl.	Tar. No.	Dist.	Inst.	Excl.
889	D	A	A	905A2	D	A	A
890A1	E	A	F	B	D	A	A
A2	E	A	F	C	D	A	A
A3	E	A	F	906A	D	A	A
B	E	A	A	B	D	A	A
C1	E	A	A	907	D	A	A
C2	E	A	A	911	E	A	A
D	E	A	A	912A	E	A	A
E1	E	A	A	B	E	A	A
E2	E	A	A	913	E	A	A
891	E	A	F	914A	E	A	A
892	E	A	F	B	E	A	A
893A	E	A	F	915A	E	A	A
B	E	A	F	B	E	A	A
894	E	A	F	916	E	A	A
895	E	A	F	917A	E	A	A
896A	E	A	F	B	E	A	A
B	E	A	F	918	E	A	A
897	E	A	A	919	E	A	A
898A	E	A	A	920	E	A	A
B	E	A	A	921A	E	A	A
899B	E	A	A	B	E	A	A
900A	D	A	A	922A	E	A	A
B	D	A	A	B	E	A	A
901	D	A	A	923	E	A	A
902	D	A	A	924	E	A	A
903	D	A	A	925	E	A	A
904	D	A	A	926	E	A	A
905A1	D	A	A	927	E	A	A

10. Tariff Numbers and Percentages, 1964-1965

Tar. No.	Dist.	Inst.	Excl. N.	Excl. E.
294C	D	A	A	A
D	D	A	A	A
375A	D	A	F	F
B1	D	A	F	F
B2/1	D	A	F	F
B2/2	D	A	F	F
B3/1	D	A	A	A
B3/2	D	A	A	A
B3/3	D	A	A	A
B3/4	D	A	A	A
B4	D	A	A	A
C1	D	A	F	F
C2/1	D	A	F	F
C2/2	D	A	F	F
C2/3	D	A	A	A
C3/2	D	A	A	A
C3/3	D	A	A	A
C3/4	D	A	A	A
C4	D	A	A	A
385	C	C	A	A
400A1	D	A	K	K
A2	D	A	K	K
A3	D	A	K	K
B1	D	A	K	K
B2	D	A	K	K
402/1	E	B	J	J
/2	E	B	J	J
403/1	E	B	J	J
/2	E	B	J	J
/3	E	B	J	J
632	D	A	F	F
633	D	A	F	F
634	D	A	F	F
654	D	C	A	A
656	D	C	F	F
673B	E	A	A	A
674	E	A	A	A
713	C	C	A	A
714	C	C	A	A
715	C	C	A	A
716	C	C	A	A
717	C	C	A	A
718	C	C	A	A
719/1	C	F	A	A
719/2	C	F	A	A
720	C	C	A	A
721	C	A	A	A
722	C	A	A	A
726A	D	A	F	F
735A1	D	B	F	F
A2	D	B	F	F
A3	D	B	F	F
A4	D	B	F	F
A6	D	B	F	F
B1/1	D	B	F	F
B1/2	D	B	F	F
B1/3	D	B	F	F
B1/4	D	B	F	F
B2/1	D	B	F	F
B2/2	D	B	F	F
B2/3	D	B	F	F
B2/4	D	B	F	F
B2/5	D	B	F	F
B2/6	D	B	F	F
B2/7	D	B	F	F
B2/8	D	B	F	F
736/1	D	B	F	F
/2	D	B	F	F
737A	D	B	F	F
B1	D	B	F	F
B2	D	B	F	F
738A1	C	A	F	F
A2	C	A	F	F
B	C	A	F	F
739A1	E	B	A	A
A2	E	B	A	A
A3	E	B	A	A
B1	E	B	J	J
B2	E	B	J	J
B3	E	B	J	J
740A	D	A	K	K
B	D	A	K	K
C	D	A	K	K
D	D	A	K	K
E/1	D	A	K	K
E/2	D	A	K	K
741/1	C	A	A	A
/2	C	A	A	A

Tar. No.	Dist.	Inst.	Excl. N.	Excl. E.
741/3	C	A	A	A
742	C	A	A	A
743	C	A	A	A
744A1	C	A	A	A
A2	C	A	A	A
B	C	A	A	A
745	C	A	A	A
746/1	C	A	A	A
/2	C	A	A	A
/3	C	A	A	A
747	C	A	A	A
748A	C	A	A	A
750/2	C	A	A	A
/3	C	A	A	A
/4	C	A	A	A
751A1	C	A	A	A
A2	C	A	A	A
B	C	A	A	A
C	C	A	A	A
D	C	A	A	A
763	C	A	A	A
767A1	C	A	F	F
A2	C	A	F	F
A3	C	A	F	F
A4	C	A	F	F
768A2	D	B	F	F
A3	D	B	F	F
A5	D	B	F	F
A6	D	B	F	F
A7	D	B	F	F
B	D	B	F	F
782/1	D	A	K	K
/2	D	A	K	K
802A	D	A	K	K
B1	D	A	K	K
B2	D	A	K	K
B3	D	A	K	K
803	D	A	A	A
807/1	D	A	K	K
/2	D	A	K	K
808A	D	A	K	K
B1/1	D	A	K	K
B1/2	D	A	K	K
B2	D	A	K	K
C1/1	D	A	K	K
C1/2	D	A	K	K
808C1/4	D	A	K	K
C2	D	A	K	K
C3/1	D	A	K	K
C3/2	D	A	K	K
C4/1	D	A	K	K
C4/2	D	A	K	K
809A1	D	A	K	K
B1	D	A	K	K
810/2/1	D	A	K	K
/2/2	D	A	K	K
812A	C	A	A	A
B1	C	A	A	A
B2	C	A	A	A
D1/1	C	A	A	A
D1/2	C	A	A	A
D2	C	A	K	K
814A	C	A	A	A
B	C	A	A	A
816/1	C	A	F	F
/2	C	A	F	F
820/1	D	D	A	A
/2	D	D	A	A
821/1	D	D	A	A
/2	D	D	A	A
822/1	D	D	A	A
/2	D	D	A	A
823A1/1	D	D	A	A
A1/2	D	D	A	A
A1/3	D	D	A	A
A1/4	D	D	A	A
A1/5	D	D	A	A
A2/1	D	D	A	A
A2/2	D	D	A	A
A2/3	D	D	A	A
A2/4	D	D	A	A
A2/5	D	D	A	A
A2/6	D	D	A	A
A2/7	D	D	A	A
B1	D	D	A	A
B2	D	D	A	A
B3	D	D	A	A
B4	D	D	A	A
B5	D	D	A	A
B6	D	D	A	A
824/1	D	D	A	A
/2	D	D	A	A

Tar. No.	Dist.	Inst.	Excl. N.	Excl. E.
825/1	D	D	A	A
/2	D	D	A	A
826/1	D	D	A	A
/2	D	D	A	A
827A1	C	J	A	A
A2	C	J	A	A
B1/1	C	J	A	A
B1/2	C	J	A	A
B2/1	C	J	A	A
B2/2	C	J	A	A
B2/3	C	J	A	A
B2/4	C	J	A	A
B3/1	C	J	A	A
B3/2	C	J	A	A
B3/3	C	J	A	A
B3/4	C	J	A	A
828/1	C	D	A	A
/2	C	D	A	A
/3	C	D	A	A
/4	C	D	A	A
/5	C	D	A	A
/6	C	D	A	A
/7	C	D	A	A
/8	C	D	A	A
/9	C	D	A	A
/10	C	D	A	A
829/1	D	D	A	A
/2	D	D	A	A
/3	D	D	A	A
/4	D	D	A	A
/5	D	D	A	A
/6	D	D	A	A
/7	D	D	A	A
/8	D	D	A	A
/9	D	D	A	A
830/1	D	D	A	A
/2	D	D	A	A
/3	D	D	A	A
831/1	D	D	A	A
/2	D	D	A	A
832A1	D	D	A	A
A2	D	D	A	A
B1/1	D	D	A	A
B1/2	D	D	A	A
B1/3	D	D	A	A
B2/1	D	D	A	A
B2/2	D	D	A	A
833A1	D	D	A	A
A2	D	D	A	A
B1	D	D	A	A
B2	D	D	A	A
B3	D	D	A	A
B4	D	D	A	A
B5	D	D	A	A
B6	D	D	A	A
B7	D	D	A	A
B8	D	D	A	A
834/1	D	C	A	A
/2	D	C	A	A
/3	D	C	A	A
/4	D	C	A	A
/5	D	C	A	A
/6	D	C	A	A
/7	D	C	A	A
/8	D	C	A	A
/9	D	C	A	A
835/1	D	C	A	A
/3	D	C	A	A
/4	D	C	A	A
/5	D	C	A	A
/6	D	C	A	A
/7	D	C	A	A
/8	D	C	A	A
/9	D	C	A	A
836A1	D	C	A	A
A2	D	C	A	A
A3	D	C	A	A
A4	D	C	A	A
B1	D	C	A	A
B2	D	C	A	A
B3	D	C	A	A
B4	D	C	A	A
B5	D	C	A	A
837/1	D	C	A	A
/2	D	C	A	A
/3	D	C	A	A
/4	D	C	A	A
/5	D	C	A	A
/6	D	C	A	A
838A1	D	C	A	A
A2	D	C	A	A
A3	D	C	A	A
A4	D	C	A	A
B1	D	B	F	F

Tar. No.	Dist.	Inst.	Excl. N.	Excl. E.
838B2	D	B	F	F
B3	D	B	A	A
B4	D	B	F	F
B5	D	B	F	F
B6	D	B	F	F
B7	D	B	F	F
B8	D	B	A	A
B9	D	B	F	F
B10	D	B	F	F
B11	D	B	A	A
B12	D	B	A	A
B13	D	B	A	A
B14	D	B	A	A
B15	D	B	A	A
B16	D	B	A	A
B17	D	B	F	F
B18	D	B	F	F
B19	D	B	A	A
839A1	D	B	F	F
A2	D	B	F	F
A3	D	B	F	F
A4	D	B	F	F
A5	D	B	F	F
A6	D	B	F	F
A7	D	B	F	F
B1/1	D	B	A	A
B1/2	D	B	A	A
B1/3	D	B	A	A
B2/1	D	B	A	A
B2/2	D	B	A	A
B2/3	D	B	A	A
840/1	D	C	A	A
/2	D	C	A	A
/3	D	C	A	A
841/1	D	C	A	A
/2	D	C	A	A
/3	D	C	A	A
842/1	D	C	A	A
/2	D	C	A	A
/3	D	C	A	A
/4	D	C	A	A
/5	D	C	A	A
/6	D	C	A	A
843/1	D	C	A	A
/2	D	C	A	A
/3	D	C	A	A
843/4	D	C	A	A
/5	D	C	A	A
/6	D	C	A	A
844/1	D	C	A	A
/2	D	C	A	A
/3	D	C	A	A
/4	D	C	A	A
845/1	D	C	A	A
/2	D	C	A	A
/3	D	C	A	A
/4	D	C	A	A
/5	D	C	A	A
/6	D	C	A	A
/7	D	C	A	A
/8	D	C	A	A
/9	D	C	A	A
/10	D	C	A	A
846/1	D	C	A	A
/2	D	C	A	A
/3	D	C	A	A
847A1	D	A	F	F
A2	D	A	A	A
A3	D	A	A	A
A4	D	A	A	A
A5	D	A	A	A
B	D	A	F	F
C	D	A	F	F
848A1	D	C	A	A
A2	D	C	A	A
A3	D	C	A	A
B1/1	D	C	A	A
B1/2	D	C	A	A
B2/1	D	C	A	A
B2/2	D	C	A	A
B2/3	D	C	A	A
B2/4	D	C	A	A
B2/5	D	C	A	A
B2/6	D	C	A	A
B2/7	D	C	A	A
B2/8	D	C	A	A
B2/9	D	C	A	A
849/1/1	D	C	A	A
/1/2	D	C	A	A
/2/1	D	C	A	A
/2/2	D	C	A	A
850A1	D	A	A	A

Tar. No.	Dist.	Inst.	Excl. N.	Excl. E.
850A2	D	A	A	A
B1	D	A	A	A
B2	D	A	A	A
C1	D	A	A	A
C2	D	A	A	A
C3	D	A	A	A
851/1	D	A	A	A
/2	D	A	A	A
852/1	D	A	A	A
/2	D	A	A	A
/3	D	A	A	A
/4	D	A	A	A
853/1	D	A	A	A
/2	D	A	A	A
/3	D	A	A	A
/4	D	A	A	A
854A1	D	A	D	D
A2	D	A	D	D
A3	D	A	D	D
A4	D	A	D	D
A5	D	A	D	D
A6	D	A	D	D
A7	D	A	D	D
A10	D	A	D	D
A1/1	D	A	D	D
A12	D	A	D	D
B1/1	D	A	A	A
B1/2	D	A	A	A
B2/2	D	A	A	A
B2/3	D	A	D	D
B2/4	D	A	D	D
B2/5	D	A	D	D
B2/6	D	A	D	D
855/2	D	B	A	A
/3	D	B	A	A
/4	D	B	A	A
856	D	B	A	A
857A	D	B	A	A
B1	D	B	A	A
B2	D	B	A	A
B3	D	B	A	A
B5	D	B	A	A
858	D	B	A	A
859/1	D	D	A	A
/2	D	D	A	A
/3	D	D	A	A
/4	D	D	A	A
859/5	D	D	A	A
/6	D	D	A	A
/7	D	D	A	A
/8	D	D	A	A
/9	D	D	A	A
/10	D	D	A	A
/11	D	D	A	A
/12	D	D	A	A
861/1	D	A	D	D
/2	D	A	D	D
862A1	D	A	D	D
A2	D	A	D	D
A3	D	A	D	D
A4	D	A	D	D
B1	D	A	D	D
B3	D	A	D	D
B4	D	A	D	D
B5	D	A	D	D
B6	D	A	D	D
B7	D	A	D	D
B8	D	A	D	D
863	D	B	A	A
864	D	B	A	A
865A1	D	B	A	A
A2	D	B	A	A
A3	D	B	A	A
B1	D	A	F	F
B2	D	A	F	F
B3	D	A	F	F
B4	D	A	F	F
B5	D	A	F	F
B6	D	A	F	F
C	D	A	F	F
867/1	E	A	A	A
/2	E	A	A	A
/3	E	A	A	A
868B1	D	A	K	K
B2	D	A	K	K
B3	D	A	K	K
B4	D	A	K	K
B6	D	A	K	K
C	D	A	K	K
D1	D	A	K	K
D2	D	A	K	K
D3	D	A	K	K
D4	D	A	K	K
869A1	D	B	A	A

Tar. No.	Dist.	Inst.	Excl. N.	Excl. E.
869A2	D	B	A	A
B1	D	B	A	A
B2	D	B	A	A
B3	D	B	A	A
C1	D	B	A	A
C3	D	B	A	A
870/1	D	B	A	A
/2	D	B	A	A
871A1	D	B	A	A
A2	D	B	A	A
A3	D	B	A	A
B1	D	B	A	A
B2	D	B	A	A
C1	D	B	A	A
C2	D	B	A	A
872A	D	B	A	A
B	D	B	A	A
878/2	D	B	A	A
/3	D	B	A	A
/4	D	B	A	A
/5	D	B	A	A
879/1	D	B	A	A
/2	D	B	A	A
880/1	D	B	A	A
/2	D	B	A	A
881/1	D	B	A	A
/2	D	B	A	A
882/1	D	B	A	A
/2	D	B	A	A
883	D	B	A	A
884	D	B	A	A
885	D	B	A	A
886	D	B	A	A
887	D	B	A	A
888	D	D	A	A
889	D	A	A	A
890A1	E	A	F	F
A2	E	A	F	F
A3/1	E	A	F	F
A3/2	E	A	F	F
B1	E	A	A	A
B2	E	A	A	A
C1	E	A	A	A
C2/1	E	A	A	A
C2/2	E	A	A	A
C2/3	E	A	A	A
890C2/4	E	A	A	A
D	E	A	A	A
E1/1	E	A	A	A
E1/2	E	A	A	A
E1/3	E	A	A	A
E1/4	E	A	A	A
E2	E	A	A	A
891/1	E	A	F	F
/2	E	A	F	F
/3	E	A	F	F
/4	E	A	F	F
/5	E	A	F	F
892	E	A	F	F
893A1	E	A	F	F
A2	E	A	F	F
B1	E	A	F	F
B2	E	A	F	F
894/1	E	A	F	F
/2	E	A	F	F
/3	E	A	F	F
895/1	E	A	F	F
/2	E	A	F	F
896/1	E	A	F	F
/2	E	A	F	F
897	E	A	A	A
898A1	E	A	A	A
A2	E	A	A	A
B1	E	A	A	A
B2	E	A	A	A
899B	E	A	A	A
900A	D	A	A	A
B	D	A	A	A
901/1	D	A	A	A
/2	D	A	A	A
902	D	A	A	A
903/1	D	A	A	A
/2	D	A	A	A
904/1	D	A	A	A
/2	D	A	A	A
905A2/1	D	A	A	A
A2/2	D	A	A	A
B1	D	A	A	A
B2	D	A	A	A
C1	D	A	A	A
C2	D	A	A	A
906A1	D	A	A	A

Tar. No.	Dist.	Inst.	Excl. N.	Excl. E.
906A2	D	A	A	A
B1	D	A	A	A
B2	D	A	A	A
907/1	D	A	A	A
/2	D	A	A	A
911	E	A	A	A
912A1	E	A	A	A
A2	E	A	A	A
A3	E	A	A	A
B1	E	A	A	A
B2	E	A	A	A
913/1	E	A	A	A
/2	E	A	A	A
/3	E	A	A	A
914A1	E	A	A	A
A2	E	A	A	A
A3	E	A	A	A
A4	E	A	A	A
B	E	A	A	A
915A	E	A	A	A
B	E	A	A	A
916/1	E	A	A	A
/2	E	A	A	A
917A	E	A	A	A
B1	E	A	A	A
B2	E	A	A	A
B3	E	A	A	A
B4	E	A	A	A
B5	E	A	A	A
918/1	E	A	A	A
918/2	E	A	A	A
/3	E	A	A	A
/4	E	A	A	A
919/1	E	A	A	A
/2	E	A	A	A
/3	E	A	A	A
/4	E	A	A	A
/5	E	A	A	A
920	E	A	A	A
921A1	E	A	A	A
A2	E	A	A	A
A3	E	A	A	A
A4	E	A	A	A
B1	E	A	A	A
B2	E	A	A	A
B3	E	A	A	A
922A	E	A	A	A
B1	E	A	A	A
B2	E	A	A	A
B3	E	A	A	A
B4	E	A	A	A
B5	E	A	A	A
B6	E	A	A	A
B7	E	A	A	A
923	E	A	A	A
924	E	A	A	A
925/1	E	A	A	A
/2	E	A	A	A
/3	E	A	A	A
926	E	A	A	A
927	E	A	A	A

Note: N = non-exempt imports
E = exempt imports.

A P P E N D I X D

COMPARISON OF TARIFF NUMBERS

of Appendix C with those used by the Bank Markazi Iran.

A comparison of tariff numbers of Appendix C (Section 10) with those used by the Bank Markazi Iran in the years 1964 and 1965 is given in this appendix.

A. Tariff numbers appearing in the Bank Markazi Iran's list of 'Potential Capital Goods' but not in Appendix C.

217-15	Fire extinguishers (chemical). But other 217's missing, and no evidence that extinguishers used more than once.
432	Paper or cardboard bobbins etc.
650-1	Building bricks
-2	
651-A1)	Graphite Manufact.
-A2)	
-B1	Crucibles
-B2	Piping
710-C3	Iron and steel piping
-D	" " " "
711-B1	Piping) sheet iron or steel
-B2	Joints etc.)
-C1	"
-C2	"
723	Cabling, Belting
726-B	Transmission chains
729-A	Coach screws
-B	Nuts and Bolts
732-A	Vehicle springs
-B	Vehicle springs
760	Copper tubing
764	Copper wire
765	Copper netting
777-A1	Nickel wire bars
868-A6	Transistors
875-A	Insulators, Ceramic etc.
-B	" "

929-1)	
-2)	Motor car clocks
-3)	
-4)	
934-1	Watch clocks
-2	Control clocks

B. Tariff numbers appearing in Appendix C list of 'Potential Capital Goods' but not in the Bank Markazi Iran list:

375-B	Motor tyres
-C	Tubes
400-B1	Tools and Tool handles (wood)
-B2	Wooden shoe lasts
402-1	assembled furniture (wood) (bent)
-2	unassembled " " "
403-1	" " " (other)
-2	
735-A	All types of heaters, stoves, etc. & parts
-B	" " " "
739-B3	Iron and steel furniture parts
740-(A-D)	Household hollowware
-E1	Insulated ice boxes
-E2	Other hollowware
741-2	Picks, mattocks
768	Copper stoves, heaters etc.
782	Aluminium pressure cookers and hollowware
802	Knives of various sorts
803	Kitchen knives
807-1-2	Scissors
808	Shears, clippers, sharpeners etc. openers
809	Spoons and forks of various types
810	Tableware - other
812	Acetylene burners etc. spirit lamps

814-A	Printing types	
816-2	Dating and making stamps	
828-2	Tyre pumps	
830-3	Parts of mechanical rollers	
836-B1	Incubators	
838-B2	Domestic filters, water heaters, coolers, etc.	
839-A2	Shop, hotel and domestic fridges	
-A5	Coolers	
-6	Car coolers	
-7	Parts of freezers etc.	
851-1	Typewriters	
-2	Parts	
854-A5-7	Fruitsqueezers, grinders etc.	
-11-12	" "	
-B2-4	" "	
-B6	Parts for these	
862-B6)		
-B7)	Household electric appliances and parts	
-B8)		
865-A1	Electric stoves	
-B1	Heaters)	
-B2	Irons)	
-B3	)	Electric
-B4	Fryers)	
868-B1	Radio	
-B2	Television	
-B3	Radiogram	
-B6	Parts	
-C	Amplifyers	
-D1	Radio transmitters	
-D3	Radio-electric apparatus	
-D4	Parts of 868	
868-C1	Loudspeakers, microphones etc.	

868-C3	Parts
871-C1	Electric equipment nes
-C2	Parts
878-2	Electric fans
-3	" safety equipment
-4	" nes.
-5	Parts
891-5	Auto parts of any types
895-2	Tricycles
897	Passenger Carriages - non-mechanical
912-A3	Telescope frames
-B1-2	Binoculars and frames
913-3	Photocamera parts
915-B	Optical equipment nes.
916-2	Precision balance weights
917-A-B1	Medical and non-medical thermometers
918-3	Fluid meters
-4	Gas/water meters
919-5	Parts, metering equipment
921-B1-2-3	Rulers, dividers, tape-measures etc.
922-B7	Compasses
925-3	Teaching demonstration models
927	Parts of 908-926

A P P E N D I X E

EFFICIENCY OF CUSTOMS DUTIES AND COMMERCIAL TAX

The efficiency of the Iranian Customs Duties and Commercial Tax for imports of potential capital goods in 1965 is measured in this Appendix by individual tariff numbers. Three sources have been used:

a. Iran, Ministry of Economy, General Department of Trade Statistics, 'General Import-Export Regulations for the Iranian Year 1344 (1965)', Tehran, 1965. From this source was obtained the rates of customs duty and Commercial Tax for individual tariff items.

b. Iran, Ministry of Finance, Bureau of Statistics, 'Yearbook of Foreign Trade Statistics of Iran, 1965', Tehran, 1966, the Appendix Issue, Part 3. This source supplied weight and value details on imports of items subject to customs duty and Commercial Tax by tariff numbers.

c. Iran, Ministry of Economy, General Department of Trade Statistics, 'Revenue of the Iranian Customs, 1956-65', Tehran, 1966, Part 2, '1965 Revenue by Tariff Numbers'.

The estimated customs duty and Commercial Tax paid on each tariff item was calculated by applying the rates in source (a) to the weight or value details in source (b). The estimated revenues were then compared with the actual revenues for each tariff item given in source (c).

A summary of the major findings is given in Chapter 6.

* * * *

(all figures in thousands of rials)

Tariff No.	Estimated Customs Duty	Estimated Commercial Tax	Actual Customs Duty	Actual Commercial Tax
294C	0.8		5.5	0.8
D	18400.0	5707.2	16659.0	6287.4
375A	96.5	0	96.3	-
B1	5369.0	0	5393.4	47.3
B2/1	17428.5	17428.5	17448.2	17356.4
B2/2	1839.0	613.0	1858.6	587.2
B3/1	50203.3	35859.5	50703.3	34474.7
B3/2	148.4	106.0	148.3	105.9
B3/3	4237.1		4345.3	19.4
B3/4			91.7	69.6
B4			-	-
C1	3835.5		3838.0	0.2
C2/1	4430.0		4412.6	11.9
C2/2	742.0		737.5	14.0
C3/1	10054.0		10132.5	256.1
C3/2	23.0		23.4	-
C3/3	799.0		1019.5	2016.7
C/34			1.4	-
C4			-	-
385	12.2		12.3	-
400A1	95.0	285.0	94.0	276.9
A2	0	0	1.8	5.4
A3	0	0	0.7	-
B1	9.5	85.5	11.3	83.6
B2	45.5	409.5	44.5	408.7
402/1	75.3	150.6	75.3	150.1
/2	6.5	13.0	6.5	13.0
403/1	14.8	29.6	14.8	36.0
/2	190.6	381.2	190.6	381.2
/3	80.8	161.6	80.8	161.5
632A			-	-
B1			1031.4	0.3
B2	1070.4		45.1	-
633	127.0		127.8	-
634	3945.0		3941.9	24.0
654	1.0	2.0	7.2	8.3
656/1	6.0	10.0	4.1	8.9
/2	15.0	25.0	15.5	2.6
673B	6.0	6.0	7.5	7.5
674	1070.0		1078.6	12.2
713	198.8	85.2	202.5	85.3
714	5.6	2.4	5.3	2.3
715	853.7	256.2	112.5	11.5

(all figures in thousands of rials)

Tariff No.	Estimated Customs Duty	Estimated Commercial Tax	Actual Customs Duty	Actual Commercial Tax
716	82.2	27.4	82.2	27.4
717	917.8	302.6	917.8	323.9
718	6.3	36.3	6.2	1.0
719/1	-	-	-	-
/2	10662.4	7996.8	8756.2	6185.8
720	28.8	115.2	34.3	121.1
721	29.1	95.4	31.5	82.2
722	5160.0	860.0	6526.3	906.3
726A	1142.4	163.2	1266.7	163.2
735A1	2.5	10.0	1.9	6.8
A2	2.5	5.0	0.3	1.6
A3				
A4			2.1	4.5
A6			-	-
B1/1	20.0	40.0	20.1	42.2
B1/2	5.0	10.0	5.8	13.6
B1/3	280.0	560.0	279.5	557.5
B1/4	160.0	320.0	48.2	192.9
B2/1			5.1	4.7
B2/2	-	-	-	-
B2/3	-	-	-	-
B2/4			13.2	29.0
B2/5			125.2	552.9
B2/6				
B2/7			-	-
B2/8			3028.1	11516.0
736/1	2253.6	1408.5	2257.0	1216.8
/2	949.6	593.5	962.9	551.6
737A	2425.5	1039.5	2424.2	1009.4
B1	1282.8	320.7	1286.9	365.8
B2	666.0	355.2	669.2	355.4
738A1	-	-		
A2	-	-	-	-
B	484.0	242.0	489.6	343.6
739A1	413.2		380.3	-
A2	1510.1		1510.0	6.6
A3	1040.4		1052.4	3.9
B1	-	-	-	-
B2	17.9	26.8	17.9	26.9
B3	5433.9	8150.8	4587.3	7360.2
740A	343.2	228.8	342.7	228.5
B	1676.0	1184.0	1770.2	1186.1
C	652.0	326.0	655.3	297.8

(all figures in thousands of rials)

Tariff No.	Estimated Customs Duty	Estimated Commercial Tax	Actual Customs Duty	Actual Commercial Tax
740D	1585.0	3804.0	1579.3	905.6
E/1	2550.0	1530.0	2559.8	1529.8
E/2	450.0	270.0	448.1	268.9
741/1	4506.0	4506.0	4495.8	3224.7
/2	1789.0	1789.0	1806.1	1391.7
/3	463.0	463.0	462.9	352.7
742	100.2	66.8	105.4	52.7
743	150.5	150.5	149.9	116.6
744A1	213.2	53.3	213.3	53.3
A2	128.0	32.0	125.8	31.4
B	351.0	140.4	368.8	132.5
745	1695.0		1860.7	27.7
746-1	2569.5		2566.5	4008.0
-2	2863.5		2875.7	5.7
-3			69.9	-
747	1065.0		1055.9	2.6
748A	967.5		951.6	2.7
750/2	570.0		578.4	1.8
/3	40.5		46.3	0.1
/4	489.0		480.4	1.3
751A1	64.1		58.1	0.4
A2	18.0		16.9	-
B	92.0		91.8	5.4
C	87.0		91.4	-
D	1238.0		1234.1	61.7
763	9.0	3.0	8.9	3.0
767A1	512.0	128.0	511.7	127.9
A2	2648.0	679.5	2660.0	670.5
A3	31.2	7.8	29.4	7.4
A4			45.9	12.0
768A2	196.0	490.0	196.9	443.8
A3	760.0	1900.0	758.9	33.6
A5			1.3	3.2
A6			325.1	724.4
A7			2.9	7.2
B	110.0	220.0	35.5	35.1
782-1	7848.0	2616.0	7731.5	2670.1
-2	1026.0	342.0	1058.4	310.6
802A	1280.0	128.0	1286.0	134.6
B1	90.0	9.0	91.8	9.0
B2	132.0	11.0	157.7	13.9
B3	756.0	94.5	649.2	77.6
803	1212.0	80.8	1249.4	78.2

(all figures in thousands of rials)

Tariff No.	Estimated Customs Duty	Estimated Commercial Tax	Actual Customs Duty	Actual Commercial Tax
807-1	2964.0	494.0	2961.8	492.8
-2	2.4	0.4	2.4	0.4
808A	112.5	37.5	113.3	36.9
B/11	1300.0		1293.9	-
B/12	-		4.5	0
B2	1.5		0.8	-
808C11	864.0	144.0	856.9	166.2
C12	186.0	31.0	185.0	30.6
C14			105.5	21.2
C2	102.0	17.0	103.0	17.4
C3/1	80.0	40.0	82.9	41.5
C3/2	5260.0	2630.0	5630.3	82.5
C4/1	41.5	41.5	41.5	41.5
C4/2	81.6	81.6	81.5	80.2
809A1	8755.0	875.5	8736.9	875.0
B1	500.0	50.0	497.2	49.7
810-2/1	9.0	27.2	9.1	27.2
-2/2	1282.1	3846.3	1039.1	2714.9
812A	198.0	198.0	198.4	198.4
B1	282.5		282.0	-
B2	-		0.9	-
D11	3594.0		3590.6	0.5
D12	-		0.2	-
D2	997.5	1852.5	10800.0	3138.2
814A	33.6		33.9	1000.0
B	23.0		22.9	-
816-1	280.0		281.4	-
-2	130.0		124.0	0.7
820-1	1975.1		1968.4	58.2
-2	1353.5		1160.6	26.5
821-1	-		-	-
-2	-		-	-
822-1	3378.1		3378.1	-
-2	59.3		63.0	0.8
823A11			-	-
A12			-	-
A13			-	-
A14			0.8	2.9
A15			1.6	2.3
A21	1548.5	309.7	1548.7	309.9
A22	183.3	719.9	183.7	80.2
A23			3423.0	14463.8
A24			14367.2	55917.4

(all figures in thousands of rials)

Tariff No.	Estimated Customs Duty	Estimated Commercial Tax	Actual Customs Duty	Actual Commercial Tax
823A25			541.3	108.2
A26			0.2	0
A27			466.8	142.2
B1	223.2	44.6	221.6	44.3
B2	6032.9	1206.6	6022.1	1466.4
B3	1620.2	324.0	1620.2	324.1
B4	205.5	41.1	205.7	40.9
B5	41742.0	8348.4	42196.5	8312.9
B6	22363.0	4472.6	23069.9	4922.2
824-1	3357.0	671.4	3358.1	1.0
-2	25.0	5.0	25.7	5.1
825-1	156.0	31.2	155.9	31.2
-2	2.0	0.4	3.1	0.6
826-1	9230.5	1846.1	9021.8	1919.1
-2	652.5	130.5	652.2	130.6
827A1	588.8	91.8	780.7	113.5
A2	89.2	119.0	92.7	14.6
B11	288.5	57.7	287.8	55.9
B12	145.0	29.0	144.1	24.6
B21			-	-
B22			4931.5	209.5
B23			122.3	259.0
B24			22.4	2.1
B31	1022.0	81.6	773.0	62.4
B32	3439.0	5846.3	3588.2	4754.0
B33			127.4	175.2
B34			1798.5	2758.5
828-1	131.5	328.7	131.4	230.6
-2	707.7	1769.4	698.6	464.6
-3	9838.2	24595.5	9806.4	2711.1
-4	3461.6	8654.0	3682.6	8795.2
-5	253.7	634.4	299.9	405.7
-6	39.1	97.7	30.7	28.8
-7	180.3	450.7	180.3	59.3
-8	8084.2	20210.6	8675.8	1668.0
-9	128.8	322.0	148.1	189.4
-10	5361.1	13402.7	5391.2	9866.8
829-1	2.0		2.0	-
-2	151.3		390.5	134.4
-3	1230.1		1258.7	0.1
-4	791.9		793.0	11.6
-5	428.0		440.1	25.3
-6	168.3		168.9	2.5

(all figures in thousands of rials)

Tariff No.	Estimated Customs Duty	Estimated Commercial Tax	Actual Customs Duty	Actual Commercial Tax
829-7	176.4		172.4	-
-8	527.1		554.7	-
-9	917.1		1340.4	3.3
830-1	183.9		183.8	6.7
-2	245.9		296.2	17.6
-3	179.9		169.1	2.0
831-1	109.7	22.0	109.7	21.2
-2	121.6	24.3	121.6	24.3
832A1	86.9	17.4	87.0	16.6
A2	6.4	1.2	6.4	0.9
B11			-	-
B12			59.6	11.9
B13			10.5	1.7
B21	1487.9	297.6	1365.9	261.9
B22	935.5	187.2	607.0	120.5
833A1			-	-
A2			29.3	-
B1	934.7		1203.2	-
B2	1079.7		1141.0	-
B3	612.5		612.7	10.7
B4	971.3		1161.4	6129.0
B5	28438.5		28374.0	147.9
B6	335.2		329.4	1.1
B7	7617.7		9807.8	3.9
B8	18231.3		24403.6	6486.9
834-1			-	-
-2			-	-
-3			-	-
-4			-	4.9
-5			-	-
-6			-	-
-7			-	-
-8			-	-
-9			-	4.2
835-1			-	-
-3			-	-
-4			-	-
-5			-	-
-6			-	-
-7			-	-
-8			-	-
-9			4089.0	-
836A1			-	-

(all figures in thousands of rials)

Tariff No.	Estimated Customs Duty	Estimated Commercial Tax	Actual Customs Duty	Actual Commercial Tax
836A2			-	-
A3			3.8	4.4
A4			0.3	0.1
B1			-	-
B2			-	-
B3			-	-
B4			14.5	3.8
B5			-	-
837-1			2.2	3.3
-2			-	-
-3			-	-
-4			-	-
-5			-	-
-6			-	-
838A1			-	-
A2			-	-
A3			-	-
A4			12.4	2.4
B1	5226.8	1045.3	5185.3	982.0
B2	125.8	25.2	128.9	22.1
B3	301.9	60.4	425.4	75.8
B4	875.6	175.1	875.8	1201.4
B5	496.5	99.3	496.5	119.1
B6	182.9	36.5	182.9	38.4
B7	20.0	4.0	20.0	4.0
B8	111.9	22.4	111.9	22.4
B9	200.4	40.2	200.4	40.1
B10	90.1	18.0	90.1	14.1
B11			-	-
B12	35.4	7.1	35.4	7.1
B13				
B14	5.4	1.1	7.3	1.1
B15	903.9	180.7	827.5	190.0
B16	487.3	97.4	492.4	80.1
B17	3048.4	609.6	2998.7	631.4
B18	28962.0	5792.4	28990.8	6005.9
B19	1960.5	392.2	1960.6	2.5
839A1	3097.6	4336.5	7127.7	8472.9
A2	2567.0	3594.5	2818.4	3056.9
A3	2995.0	1198.0	2995.0	1217.5
A4	19532.2	24954.0	19801.5	7940.2
A5	95.2	42.0	95.2	38.1
A6	806.6	408.0	804.2	369.1

(all figures in thousands of rials)

Tariff No.	Estimated Customs Duty	Estimated Commercial Tax	Actual Customs Duty	Actual Commercial Tax
839A7	35462.4	52116.0	33005.4	26580.6
B11			-	1338.6
B12			46.2	3537.8
B13			116.7	5338.2
B21	1974.9	790.0	1974.9	901.1
B22	3458.2	1383.3	3447.3	1115.2
B23	739.5	295.8	719.4	347.4
840-1	6410.3		6610.6	6006.9
-2	306.1		269.9	-
-3	5581.6		5539.7	38.4
841-1	120.6		123.7	-
-2	241.3		252.2	-
-3	63.5		63.4	-
842-1			-	-
-2			-	-
-3			56.0	-
-4			-	-
-5			-	-
-6			9.7	-
843-1	30.2		30.2	-
-2	150.4		150.4	-
-3	179.2		179.2	-
-4	4081.0		4524.8	18.9
-5	1488.0		1003.0	-
-6	2774.8		2776.0	70.4
844-1			-	-
-2			-	-
-3			-	-
-4			2.6	0.8
845-1			-	-
-2			-	-
-3			-	-
-4			-	-
-5			-	-
-6			-	-
-7			-	-
-8			-	-
-9			-	-
-10			-	-
846-1			-	226.3
-2			5.1	-
-3			-	123.7
847A1	45516.0	7586.0	45007.5	11897.9

(all figures in thousands of rials)

Tariff No.	Estimated Customs Duty	Estimated Commercial Tax	Actual Customs Duty	Actual Commercial Tax
847A2	207.0	34.5	206.5	35.2
A3	150.0	25.0	148.6	24.6
A4	345.0	57.5	344.0	108.1
A5	375.0	62.5	364.4	76.5
B	1341.0	1117.5	1041.8	626.3
C	2976.0	496.0	2968.7	555.3
848A1	186.9		186.8	-
A2	1470.2		1365.5	5.7
A3	1278.3		1334.2	7.0
B11			-	6.4
B12			0.3	0.1
B21	336.7		336.6	-
B22	425.0		425.0	-
B23	13806.3		14437.0	76.4
B24	16.9		16.9	-
B25	574.6		532.1	10.1
B26	260.1		260.1	-
B27	501.4		500.7	-
B28	869.7		869.6	-
B29	14175.9		14233.5	175.7
849-11			-	-
-12			-	-
-21	677.7		659.0	0.6
-22	253.9		255.5	0.5
850A1	411.1	411.1	410.1	406.9
A2	36.9	36.9	37.0	37.0
B1	494.8		529.9	103.6
B2	148.6		149.0	-
C1	480.7	576.9	382.3	565.1
C2	36.5	43.8	29.2	43.8
C3	696.4	835.5	559.8	819.7
851-1	6243.9	2081.3	6222.0	2080.1
-2	105.0	35.0	179.4	59.7
852-1	5613.1	1871.0	5620.8	1871.1
-2	9024.7	3008.2	9010.7	2984.9
-3	1213.6	404.5	1371.7	409.7
-4	1803.9	601.3	1802.6	601.9
853-1	2085.7	695.2	2076.9	687.4
-2	426.4	142.1	432.5	145.9
-3	1626.1	542.0	1651.5	545.1
-4	646.2	215.4	646.1	215.8
854A1	22.5	22.5	22.4	24.2
A2	1631.4	815.7	2331.3	815.7

(all figures in thousands of rials)

Tariff No.	Estimated Customs Duty	Estimated Commercial Tax	Actual Customs Duty	Actual Commercial Tax
854A3	5.7	6.7	5.8	6.7
A4				
A5	113.1	131.9	107.2	125.0
A6				
A7	16.5	19.2	16.6	19.2
A10				
A11	101.1	117.9	101.2	116.2
A12	62.7	73.1	62.6	69.0
B11			-	-
B12			45.1	25.0
B21	251.5	251.5	251.5	251.5
B22	18.9	18.9	18.9	18.9
B23	40.0	40.0	68.7	32.8
B24	0.2	0.2	0.1	-
B25	12793.2	12793.2	13273.9	12604.2
B26	4552.6	4552.6	4448.4	4337.3
855-2	30765.2	7691.3	31155.4	7693.5
-3	10129.2	2532.3	10106.2	2441.9
-4	18010.8	4502.7	17729.1	4464.8
856	12814.8	23280.8	13117.6	22481.4
857A	766.3		627.2	10.8
B1			-	-
B2			-	-
B3			-	-
B5			13.7	7.4
858	82167.1	16433.4	80653.8	16619.7
859-1	9289.0		12341.7	77.2
-2	255.3		286.1	2.3
-3	2123.9	4247.8	2149.0	1110.4
-4	183.2		182.2	4.3
-5	5578.5		6389.5	47.7
-6	991.6	4958.0	1098.1	4090.5
859-7	3937.8	7875.7	3959.6	6418.3
-8	190.8	381.7	189.2	306.1
-9	54.7		54.8	1.0
-10	25.1		25.1	-
-11	28.2		28.2	-
-12	2938.7		3031.7	1061.5
861-1	14664.0	3665.0	14691.9	3674.7
-2			-	-
862A1	462.9	231.4	485.7	214.2
A2	405.5	202.7	408.5	254.9
A3	1868.9	934.4	2175.6	912.3

(all figures in thousands of rials)

Tariff No.	Estimated Customs Duty	Estimated Commercial Tax	Actual Customs Duty	Actual Commercial Tax
862A4	449.5	224.7	450.1	212.8
B1	31978.2	10659.4	31923.8	6877.6
B3	703.8	117.3	701.8	120.4
B4	3250.5	541.7	3251.0	552.8
B5	1157.4	192.9	1159.1	201.2
B6	1494.9	249.1	1486.0	248.6
B7	15.9	2.6	15.9	2.6
B8	2480.4	413.4	2369.1	487.6
863-1	23253.6	5642.0	23034.8	5789.9
-2	2055.9	760.0	2054.7	760.0
864-1	17288.1	3772.0	17389.3	3728.4
-2	2334.0	426.0	2679.8	881.1
865A1	216.6		291.1	28.6
A2	243.8		243.9	0.1
A3	839.2		838.9	4.8
B1	8806.2	4403.1	8945.7	4274.5
B2	5891.4	981.9	5869.3	980.1
B3	12.0	2.0	11.9	2.0
B4	67.2	11.2	39.0	18.2
B5	1746.6	291.1	1741.7	285.2
B6	7342.8	1223.8	6463.4	1178.9
C	2469.6	411.6	2437.9	450.9
867-1	107.7		107.4	0.6
-2				
-3	4661.8		4795.8	35.4
868B1	13160.9	39482.7	11508.2	22107.5
B2	408.7	1226.1	414.5	905.4
B3	690.4	2071.2	733.5	2048.9
B4	1.5	4.5	2.4	3.6
B6	99732.0	299196.0	43960.7	88634.8
C	221.6	332.4	221.5	332.2
D1	370.4	555.6	380.2	-
D2				
D3	2225.2	3337.8	2003.5	1923.6
D4	28364.0	42546.0	27376.3	3527.7
869A1	68.8		68.8	-
A2	200.8		209.3	2.0
B1	2120.0		2120.5	0.3
B2	90.8		90.8	-
B3	92825.4		56963.1	38.5
C1	2052.4	513.1	2368.1	970.8
C3	448.4	112.1	429.4	140.7
870-1				

(all figures in thousands of rials)

Tariff No.	Estimated Customs Duty	Estimated Commercial Tax	Actual Customs Duty	Actual Commercial Tax
870-2	283.1		283.2	-
871A1	828.0	165.6	818.0	163.6
A2	0.5	0.1	0.9	0.6
A3	542.0	108.4	540.6	110.1
B1	6.7		6.7	-
B2	16.9		16.9	0.2
C1	976.5	195.3	970.5	180.2
C2	880.5	176.1	875.1	192.6
872A	3456.5	691.3	3459.9	684.9
B	10766.0	2153.2	10683.0	2152.1
878-2	3371.4		3293.9	4083.4
-3	32801.4		40896.9	45.7
-4	2261.4		2167.7	67.3
-5	52430.7		51082.5	749.8
879-1				
-2	511.7		511.7	-
880-1				
-2	9.4		9.5	-
881-1	342.9		342.9	-
-2				
882-1				
-2	9015.6		20656.4	-
883				
884				
885				
886	532.2		548.4	-
887	4754.4		4754.2	0.7
888	86.4		86.4	-
889		1082.9	913.0	16344.7
890A1	133498.8	420258.0	145617.4	283614.0
A2/1		278004.0		
A2/2	170341.8		176262.7	296423.1
A3/1	2488.1	564.0	1811.5	3203.8
A3/2	673.4	192.0	954.3	2670.8
B1	13192.8	13192.8	13861.1	6165.2
B2	416.6	416.6	437.8	4.0
C1	42.1		45.5	-
C2			25.5	-
C2/1	16799.7	22399.6	17164.5	11509.9
C2/2	24723.6	32964.8	25244.2	17305.9
C2/3	9182.4	12243.2	9293.9	6766.1
C2/4	2933.7	3911.6	2947.4	2845.0
D	73.5	10.5	74.0	10.6
E1/1	1027.0		1027.9	3.1

(all figures in thousands of rials)

Tariff No.	Estimated Customs Duty	Estimated Commercial Tax	Actual Customs Duty	Actual Commercial Tax
890E1/2			-	-
E1/3			-	-
E1/4	59.2		59.3	-
E2	6796.5	1359.3	6274.6	1238.6
891-1	47417.5	47417.5	52214.3	1963.7
-2	73116.0	73116.0	73124.3	6042.9
-3	2808.8	2808.8	3233.5	513.9
-4	110.7	110.7	1.3	-
-5	2855.1	2855.1	2864.8	-
892	1691.8	3774.0	1692.8	3329.8
893A1	10509.4	27108.0	10374.0	25148.7
A2	28.4	150.0	38.0	56.8
B1	137885.4	87458.0	138781.5	86581.0
B2	22625.0	11132.0	22453.7	10904.0
894-1	41524.0	41524.0	41133.7	40988.4
-2	6970.5	6970.5	6950.2	6814.6
-3				
895-1	15302.2	46547.5	16028.7	38771.7
-2	450.6	1090.0	450.5	971.4
896-1	6084.4	3650.7	6080.9	3881.3
-2	4235.2	19930.0	4798.2	13185.4
897			-	-
898A	606.7		606.7	-
A1	192.6		57.8	125.7
A2	1416.5		1416.5	271.6
B1	1916.2	638.7	1942.4	587.4
B2	482.8	160.9	827.7	70.9
899B	41.5		41.6	-
900A			-	-
B			-	-
901-1			-	-
-2			-	-
902			-	-
903-1			-	-
-2			-	-
904-1			-	-
-2			-	-
905A2/1			-	-
A2/2			42.1	42.1
905B1			0.8	-
B2			-	-
C1			-	17.8
C2			-	33.4

(all figures in thousands of rials)

Tariff No.	Estimated Customs Duty	Estimated Commercial Tax	Actual Customs Duty	Actual Commercial Tax
906A1			-	-
A2			-	-
B1			-	-
B2			-	-
907-1			-	-
-2			-	-
911	86.7		85.1	3.5
912A1	-		-	-
A2	-		-	-
A3	3.8		3.7	-
B1	225.0	75.0	224.7	75.5
B2	159.9	53.3	159.8	24.3
913-1	3147.9	1049.3	3155.1	1030.8
-2	197.4	65.8	197.6	54.5
-3	2670.9	890.3	2459.6	788.4
914A1	330.6	132.2	325.6	135.3
A2	3161.7	1264.8	3128.9	2272.0
A3	330.2	132.0	328.9	131.2
A4	4220.4	1688.2	4123.3	1615.1
B	267.3		284.8	14.1
915A	805.9		947.4	1.1
B	1618.5		774.2	3.2
916-1	607.6		616.0	6.9
-2	29.0		28.9	-
917A	266.5		260.0	1003.1
B1	318.7	63.7	318.4	57.8
B2	26.1	5.2	27.0	5.6
B3	108.0	21.6	108.0	21.6
B4	2.7	0.5	2.7	0.5
B5	3327.4	665.5	3228.3	645.8
918-1				
-2	8948.3	1769.7	8500.7	1699.0
-3	32.6	6.5	32.6	6.5
-4	708.8	141.7	1114.3	427.2
919-1	6.2	1.2	6.2	-
-2	18.0	3.6	18.0	3.6
-3	1.0	0.2	1.0	0.2
-4	609.7	122.0	609.5	117.0
-5	1974.2	394.8	1700.2	328.5
920	6487.1	718.0	6437.7	878.2
921A1	117.5		120.7	1.8
A2	36.1		33.4	0.1
A3	2.3		2.3	-

(all figures in thousands of rials)

Tariff No.	Estimated Customs Duty	Estimated Commercial Tax	Actual Customs Duty	Actual Commercial Tax
921A4	1061.1		1034.3	3.9
B1	128.5		184.2	-
B2	2747.6		2406.4	4.6
B3	1118.7		1562.7	3.1
922A			-	-
B1	3798.3		3798.6	16.4
B2	56.7		56.7	1.8
B3	49.3		50.3	0.2
B4	0.2		0.2	-
B5	516.0		515.9	-
B6			-	-
B7	39.0		39.0	-
923	12195.6		12436.6	48.7
924-1	278.6		277.7	1.5
-2	248.1		248.0	0.3
-3	72.8		73.7	-
925-1			-	-
-2	12.8		12.8	-
-3	698.5		732.2	94.5
926	4104.3		4158.7	36.1
927	432.2		422.7	35.5

APPENDIX F

ESTIMATION OF IMPORTS EXEMPT FROM DUTY, 1900-1927.

For the years 1900-1927 (with the exception of 1924) the Iranian Foreign Trade Statistics exclude details of imports exempt from customs duties. In 1924, 79 per cent of exempt imports of potential capital goods by value (13.7 million rials out of 17.3 million rials) was imported by the Anglo-Persian Oil Company, showing the importance of the oil company's imports in exempted imports, while 21 per cent was imported by other exempt agencies. In 1924, the non-APOC exempt imports amounted to 15 per cent of non-exempt imports of potential capital goods. To fill the data gaps, therefore, independent estimates of G.D.F.C.F. by the APOC for each year are added to 15 per cent of the non-exempt imports of potential capital goods for the equivalent year (the 15 per cent being assumed constant over the period).

Before addition, two adjustments are made. Firstly, the 15 per cent of non-exempt imports is marked-up by 20 per cent (i.e. to 18 per cent of non-exempt imports) to cover freight and distribution expenses. Secondly, a deduction of one-third is made from the annual APOC estimate to cover investment in construction and other non-imported works. This latter deduction is estimated from the relationship for 1924 between G.D.F.C.F. in imported capital goods of 21.9 million rials compared with total G.D.F.C.F. of 33.0 million rials as estimated by APOC.

Since annual figures for investment by the APOC are given in Pounds Sterling, and since, during the relevant period, the rial (kran) rate with Sterling fluctuated, it has been necessary to adopt annual average rates for Sterling in terms of rials.

The full calculations are shown below:

(Figures in these columns in mill. rials

1	2	3	4	5	6	7	5+7
Year	Rls/£ a)	G.F.C.F. BY APOC '000£ b)	mRls	2/3Rls	Non-ex. Total c)	Imports 18%	TOTAL
1900	-	-	-	-	5.1	0.9	0.9
1901	53	172.5	9.1	6.1	6.0	1.1	7.2
1902	57	172.5	9.8	6.6	2.2	0.3	6.9
1903	56	172.5	9.7	6.4	4.8	0.9	7.3
1904	61	172.5	10.5	7.0	4.1	0.7	7.8
1905	62	172.5	10.7	7.1	6.0	1.1	8.2
1906	55	172.5	9.5	6.3	5.4	1.0	7.3
1907	50	172.5	8.6	5.8	3.6	0.6	6.4
1908	53	172.5	9.1	6.1	3.4	0.6	6.7
1909	54	186.8	10.1	6.7	6.9	1.2	8.0
1910	55	195.6	10.8	7.2	6.6	1.2	8.4
1911	55	185.5	10.2	6.8	9.5	1.7	8.5
1912	56	153.0	8.6	5.7	8.6	1.5	7.2
1913	56	308.0	17.3	11.5	11.9	2.1	13.6
1914	62	430.5	26.7	17.8	11.9	2.1	19.9
1915	58	265.5	15.4	10.3	28.2	5.1	15.3
1916	39	329.8	12.9	8.6	18.0	3.2	11.8
1917	29	208.0	6.0	4.0	20.8	3.7	7.8
1918	28	190.2	5.3	3.5	17.6	3.2	6.7
1919	26	1393.4	36.2	24.2	32.3	5.8	30.0
1920	34	1878.7	63.9	42.6	11.8	2.1	44.7
1921	51	1552.6	79.2	52.8	13.8	2.5	55.3
1922	57	1770.1	100.9	67.2	11.2	2.0	69.3
1923	47	966.1	45.4	30.3	15.5	2.8	33.1
1924	42	786.5	33.0	22.0	23.1	4.2	26.2
1925	44	14.0	0.6	0.4	31.1	5.6	6.0
1926	49	-	-	-	60.7	10.9	10.9
1927	49	668.3	32.7	21.8	77.4	13.9	35.8

Notes: a) From Yeganegi, E.B., 'Recent Financial and Monetary History of Persia', New York, 1934, p.61.

b) From Annual Balance Sheet of A.P.O.C. at Board of Trade, London, (where depreciated assets are given only, a straight-line depreciation of 10 per cent per year is assumed to have been applied).

c) From Foreign Trade Statistics of Iran, 1900-1927.

APPENDIX G

THE IRANIAN WHOLESALE PRICE INDEX

1900-1965

The Wholesale Price Index presented in this appendix is a composite index based on four sources of information. The basic source is the Revised Wholesale Price Index constructed by the Bank Melli Iran in 1960[1] which revised the series (based on Tehran prices) in existence from 1936 and provided the basis for the current series presented regularly by the Central Bank of Iran.[2]

For the years 1913-1933 an index of domestic commodity prices constructed by Yaganegi is utilized[3] while for other years in the 65-year period under study the following two assumptions were made.

1. It is assumed that the level of prices remained constant from 1900-1912[3]. This accords with data provided by Yaganegi for the following 20 years.[4]
2. It is assumed that the level of prices in the years 1934 and 1935 rose by approximately the same rate as in the year 1937. This accords with the available scant data on this period.[5]

The composite index has been revised here to give the base year as 1965, the last year of this study.

Iranian Wholesale Price Index 1900-1965

(1965 = 100)

1900	6.0	1934	7.4
1901	6.0	1935	8.8
1902	6.0	1936	9.3
1903	6.0	1937	11.2
1904	6.0	1938	11.5
1905	6.0	1939	13.2
1906	6.0	1940	14.6
1907	6.0	1941	20.7
1908	6.0	1942	40.0
1909	6.0	1943	60.0
1910	6.0	1944	61.9
1911	6.0	1945	59.5
1912	6.0	1946	55.4
1913	6.0	1947	62.1
1914	5.7	1948	66.9
1915	6.2	1949	58.1
1916	6.6	1950	54.9
1917	7.0	1951	58.6
1918	7.0	1952	62.3
1919	6.9	1953	79.6
1920	6.0	1954	88.2
1921	5.7	1955	85.0
1922	6.5	1956	91.6
1923	6.0	1957	89.9
1924	6.4	1958	88.8
1925	6.4	1959	90.5
1926	6.5	1960	92.2
1927	6.0	1961	92.4
1928	5.7	1962	93.7
1929	6.0	1963	94.0
1930	6.2	1964	99.1
1931	6.3	1965	100.0
1932	6.5		
1933	6.6		

Notes:

1. Bank Melli Iran, 'Bulletin', No.227, February 1961, pp.1 ff.
2. Bank Markazi Iran, 'Bulletin', Vol.no.1 following.
3. Yaganegi, E.B., 'Recent Financial and Monetary History of Persia', New York, 1934, p.122.
4. Ibid., p.122 and pp.139 ff.
5. From annual reports of Imperial Bank of Persia.

APPENDIX H

BANKING AND ECONOMIC DEVELOPMENT IN IRAN

(from Bankers Magazine, December 1967)

In 1900, Iran[1] was an 'agricultural country of the most backward type, with no modern industry, no roads or railways, no developed mines, and an adverse balance of trade'.[2] This year, as the Third Economic Plan ends, average annual family income is over £400, a massive infra-structure programme has almost been completed, industrial development has changed the face of the domestic bazaars, there is a surplus of agricultural commodities, and, for the third successive year, the balance of payments is favourable.

For over 60 years the development pattern of the banking network has been parallel to that of the economy as a whole. Up to the late twenties little progress had been made in either. The economy was then given impetus by the late Reza Shah, while at the same time, Iran's first national commercial bank, together with three other state banks, was founded. Broadly speaking, the pattern was then status quo during the Second World War, brief expansion until 1951, stagnation during Mossadeq's nationalistic interlude, then rapid economic and banking development from the mid-fifties.

How far does banking development reflect economic development and how far is it itself a cause of economic development? The inter-relationship is complex but by tracing the twentieth century history of Iranian banking,

the reasons for its expansion and the specific actions taken by the banks to encourage economic development, it is possible to throw some light upon it.

Early Development

As in so many countries of the world, it was the jewellers, goldsmiths and moneychangers who performed the functions of bankers in Iran until the late nineteenth century.[3] And the decline of the 'traditional' banker came slowly, and not without a fight. In 1888, for the first time ever, a foreign banking institution - the New Oriental Bank - came to the country. In the following year this was taken over by a newly formed Imperial Bank of Persia,[4] with head offices in London, which had obtained monopoly rights of note issue from the ruling Shah. The new banknotes took time to gain acceptance, however, and moneychangers fought against the monopoly by issuing forgeries or almost-identical notes on their own account. A Russian bank (the Loan Bank of Iran), which had been formed as a partial counter to the British concession and was used almost exclusively as an instrument of political policy, then joined in the fray by accepting the bogus notes. But in the end it was the Imperial Bank which won the day, and by the First World War it had become an undisputed influence on the monetary and financial policy of the country.

Unfortunately, the bank's policy was by no means conducive to economic development, or even to the increased monetization of the economy. Because of difficulties in transport and communications, its banknotes were only cashable in the town where they were issued. Moreover, the supply of money was totally inadequate for the requirements of commerce. In 1911, the American Treasurer-General to the Persian Government wrote: 'In some instances the cost of transferring Persian money from Tehran to other cities is as high as eight per cent. It is never less than one per cent'.[5] The Imperial Bank also discriminated against the Persians in giving credit. As early as 1898 the Chairman of the Board in London, talking of bank officials in Persia, said 'they know the Persian character, and they also know that to lend money to a Persian is almost certainly the equivalent of making a bad debt, and such business is avoided'.[6]

This policy was continued into the 1920s, when criticisms of the Imperial Bank came more frequently and more fiercely. 'Upon one day cheques were only received to such an extent as was necessary to liquidate overdrafts, while upon another no difficulty was made in crediting customers' accounts; silver was taken at the bank today, while tomorrow notes only were received, and to such an extent was this carried that notes actually commanded a

premium of about three per cent over coin'.[7]

The Imperial Bank took particular care to consolidate its own financial position even at the expense of the economy. In a delightful speech to shareholders in 1905, the bank's chairman showed not only how little the bank cared for Persia's external monetary stability, but how depreciation of the currency had actually helped the bank to find security. '(with)...the kran, which has now fallen to the value of about fourpence, being the measure of value and the only silver currency, how could a successful run on the bank be engineered where you have practically to pay out in fourpences? It is a physical impossibility. If you go to the bank in Tehran tomorrow with 50,000 tomans, which is equivalent to about £8,400, you will have to carry away $2\frac{1}{4}$ tons of silver. Runs, under these circumstances, are practically impossible'.[8]

Perhaps it is not so surprising that the Imperial Bank tended to safeguard its own interests, and those of its shareholders, rather than take unnecessary risks in promoting economic development. After all, in the first 35 years of its establishment there was political insecurity, religious riots, a dynastic revolution and social unrest in the country. Indeed, it is, to some extent, a measure of the success of the bank that, throughout all such disturbances, its security was rarely endangered,

and that all debts were fully paid even where, because of robberies, this entailed a loss to the bank. There is no doubt that, in any case, the turmoil in the country was the main cause of economic stagnation, and the Imperial Bank did at least give the Persian public its first glimpse of a reliable and safe monetary institution.

Political and Economic Motives

Pressure for an Iranian national bank was part of the general reaction against foreign concessions in those times and began almost as soon as the success of the Imperial Bank was seen. During the constitutional movement of 1906, a call was even made for a central bank, a suggestion which the Imperial Bank's chairman slapped down by calling it, rightly and openly, 'an exceedingly ridiculous idea, put forward by people ignorant of banking'.[9]

By the early 1920s, the original Russian bank (together with its massive debts) was ceremoniously handed over to the Persian government, only to be replaced by a new Russo-Iranian bank. At the same time the Ottoman Bank extended its activities from Turkey and Iraq to open three Iranian branches. And with three foreign concerns operating in the country, the new Shah felt that the time was ripe to establish a purely Iranian bank.

As a start, the Army Co-operative Bank was founded to handle the accounts of the military. In later years

this bank (originally known as the Pahlavi Bank and now named Bank Sepah) was to become one of the leading commercial banks, but for the first decades of its existence its commercial activities remained relatively small. It was certainly not imposing enough to meet the demands of nationalism, and so the National Bank (Bank Melli) was founded in 1928 to take over the government accounts and also the right of note issue.

However much national prestige was gained by this move, it had little effect on the progress of the economy. Most of the industrial and infra-structure investment of the later inter-war years was financed by special customs duties on tea and sugar imports, rather than by mobilizing savings out of private incomes. Moreover, the National Bank took nearly a decade to prove to the public that it was as safe as the Imperial Bank, which continued to remain in operation. Only after 1937 did a sizeable increase in deposits occur, mainly due to the establishment of a National Savings Fund by the Iranian bank. By that time, however, serious inflation was causing a reversal of both public and private investment policy, and the Second World War halted any movement towards economic development.

Two of today's specialized banks, independent institutions which were formerly departments of the National Bank,

date from the 1930s - the Agricultural Bank and the Mortgage Bank (the former was also intended to handle industrial finance at first, but in this it failed miserably). Had these two banks made any serious attempt to achieve what they were established for, they might have effected substantial changes in the structure of the economy. As it was, there is no evidence that they made any real contribution to the agricultural sector or to construction activity. Indeed, one suspects that they were used primarily for making short-term loans to large landowners on a strict collateral basis.

In the lull following the end of the Second World War, it became clear to the Iranian government that some sort of planning was called for. Development was slow and disorganized; most of the country's capital equipment was worn out or in urgent need of repair. A Plan Organization was set up in 1948, about the same time as the first private Iranian commercial bank was established, although there appears to be no connection between the two. But just as the plan was starting to instil some action into a lethargic economy, the Mossadeq episode intervened, cutting off vitally important oil revenues for almost three years. During the first year of the break, the extraordinary number of five new commercial banks came into being. It was not, of course, economics that de-

manded this sudden expansion of the banking network. It was the disappearance of the Ottoman Bank branches from the Iranian scene and the enforced closure of the well-established and ubiquitous Imperial Bank by the anti-British government. The new banks jumped at the type of chance that infant industry protection offers, and the Imperial Bank, though it returned to Iran in 1958 as the Bank of Iran and the Middle East, never regained its former status.

Up to 1955, therefore, the banking network had done little to stimulate economic development, though it had introduced the concept of modern banking to a small section of a generally suspicious public. It had not made any great efforts to increase the rate of monetization of the economy, nor had it provided any significant finance for capital formation. Indeed, out of the array of eleven banks which were in operation at that time, perhaps only one (the first private commercial bank, Bank Bazargani Iran) had been established as a result of economic demands. The rest stemmed from political motives or reaction to political pressures on the foreign banks.

Bank Specialization

After 1956, however, the story is somewhat different, showing a stronger relationship between banking and economic growth. The oil royalties started flowing again,

unfinished First Plan projects were transferred to a new, ambitious Second Seven Year Plan, and, for the first time in its history, Iran experienced a real economic boom. Following in the wake of this upsurge in activity, eleven more commercial banks started business, and still more would have been established had the government not clamped down on them, fearing a possible collapse of confidence in the new assortment of generally inexperienced managers. Even today there are fears over the liquidity of at least three of these banks, and pressures for mergers or take-overs are becoming stronger.[10]

But cut-throat competition for deposits among these banks has served to widen the scope of Iranian banking. Many of the commercial banks have suddenly found the need to specialize. Some work primarily in foreign trade financing (often, incidentally, encouraging imports at the expense of domestic industry), others deal with particular countries. One bank, Bank Omran, provides credit facilities for co-operatives on the former royal estates; another, the Bank Refah Kargaran, finances factory co-operatives with the funds of the State Social Insurance Organization as backing; yet another, Bank Saderat, has turned to the rural areas by establishing over 1,000 far-flung branches, which have picked up an almost unbelievable turnover of business even in the most backward parts of the

country.

Although physical money-substitutes such as cheques are still not generally acceptable, the greater monetization of the economy, together with a rapid increase in the number of savings deposits has given a considerable impetus to development. One student of Iranian banking has gone so far as to suggest that the growth of savings accounts recently has ensured that the supply of investible funds is no longer a restraint on capital formation in the country.[11]

The supply of investible funds is, of course, only one side of the coin. The funds must be transferred to investors. For this reason, the five specialized Iranian banks are starting to play a more decisive part in development than they have previously done.

The Agricultural Bank, for example, spent thirty years in the wilderness before really getting down to the business of promoting agricultural development. And even then, the expansion of rural loans only came about after the land reform programme had replaced feudal estates by small holdings and these small holdings had been grouped together into co-operatives. This bank has now started a successful new system of mobile branches which tour the country collecting repayments and providing advice and new loans. But, by changing its policy from giving small

personal loans to granting larger sums to co-operatives, it is clear that the bank is strengthening its own position at the expense of the co-operatives, who now take responsibility for division of loans among farmer members. Providing the economy maintains a reasonably steady rate of growth, this factor may not prove to be important, but an unexpected recession could cause havoc to the finances of the village co-operatives.

The other, old-established specialized organization, the Mortgage Bank, has also made efforts to direct its policies towards general housing development in recent years. More loans are being made to low-income earners and the proportion of loans made from the Teheran office is declining as the bank widens its field of operations in the provinces.

On the industrial side, two large development banks compete for business - the Industrial Credit Bank, a public institution working with Plan Organization funds, and the privately run Industrial and Mining Development Bank of Iran.[12] Both have been successful in attracting funds from abroad, in providing surveys and technical assistance, as well as in their selection of borrowers. But a rough computation shows that the annual finance they have provided is equivalent only to about five per cent of gross domestic fixed capital formation. This is hardly enough

to give these banks a real influence in the economy.

The fifth specialized bank, the Distributors Co-operative Credit Bank, is something of an enigma. Its establishment could be a stroke of genius or a terrible mistake. The aim of the bank is to finance distributor co-operatives - bodies which are supposed to bridge the gap between producer and consumer, and replace the 'profiteering' middlemen by statistically-based orders and purchases. The bank has not been in existence long enough to show useful results, and there is wide public suspicion of its operations. The major bottleneck to its efficient working is a lack of competent administrators, and because of this, all the bank may achieve in the end is the formation of an even more monopolistic and disorganized wholesaling system than existed previously.

Central Banking

Perhaps the most important stimulus to the development of the Iranian economy in the post-war period was the establishment of the Central Bank of Iran (Bank Markazi Iran) in 1960. The sudden increase in the number of commercial banks made it essential for the National Bank - a commercial bank in its own right - to separate off its functions of note issue and monetary control. A banking law was passed to make this possible and the Central Bank, working through directives and recommendations because of

the lack of a money market, was given as its first major task the stabilization of the economy after the inflationary boom of the late 1950s. It did this well enough to engender public admiration and confidence, and since that time its considerable array of economic experts have kept a weather eye on the economy, paying particular attention to the 'rival' activities of the government budget and development departments. Concomitantly, the Central Bank's Statistics Department has produced reasonably reliable national income and balance of payments figures as well as a useful revision of an out-of-date cost of living index. The Economics Research Department has produced excellent surveys on housing construction and consumer expenditures. And the Centre for the Attraction and Protection of Foreign Investments in Iran can point to a number of big clients from America, Britain and Western Europe.

Thus during the past ten years as distinct from the previous fifty, new banks have been established more for reasons of economics than of politics. All the banks have contributed more to economic development than they did previously. Some of this has been by accident - the inter-bank rivalry creating new deposits, for instance; some has been due to old institutions reappraising, or being forced to reappraise, their policies. In any case,

the contribution still remains small and rather tenuous. And the relationship between progress in the banking sector and in the rest of the economy, though working both ways, certainly does not seem to be as strong as first impressions hinted.

With increasing specialization of the commercial banks, gradual expansion of the existing specialized banks, and the presence of a competent Central Bank, it is likely that Iran's highly advanced banking network will play an increasingly important role in the future development of the economy. At the same time, however, it is unlikely that continued economic growth will have any appreciable effect on the structure of the banking sector in the coming years.

Notes

1. The names 'Iran' and 'Persia' are interchangeable.

2. M.K. Fateh, 'The Economic Position of Persia', (London: 1926), p.84.

3. A brief review of the prior history of Iranian banking can be found in 'Banking in Iran', (Iran: Ministry of Foreign Affairs, pamphlet No.10).

4. Later to become the British Bank of the Middle East.

5. W.M. Shuster, 'The Strangling of Persia', (London: 1912), p.270.

6. Imperial Bank of Persia, 'Minutes of Ordinary General Meeting', 1898.

7. J.M. Balfour, 'Recent Happenings in Persia', (London: 1922), p.211.

8. Imperial Bank of Persia, 'Minutes of Ordinary General Meeting', 1905.

9. Imperial Bank of Persia, 'Minutes of Ordinary General Meeting', 1906.

10. See Julian Bharier, 'Need to Strengthen Iran's Banking Structure', The Financial Times World Banking Survey, May 1967.

11. P.G. Franck, 'The Growth of Money Stock and Liquid Assets in Iran....', CENTO Symposium on the Development of Capital Markets, 1965, pp.97-105.

12. For an excellent discussion of the working of these two banks see R.E. Benedick, 'Industrial Finance in Iran', (Boston: Harvard University Press, 1964).

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Reprinted from
POPULATION STUDIES, Vol. XXII, No. 2, p. 273, *July*, 1968

A Note on the Population of Iran, 1900–1966

JULIAN BHARIER

The first national census of Iran was held in November 1956,[1] and the second in November 1966.[2] Prior to 1956 the only official population records that existed were figures for an urban headcount (held between June 1939 and August 1941)[3] and the statistics of the Civil Registration Office (C.R.O.), which started operations in 1928.[4]

Between 1890 and 1957, historians, travellers and Iranian government officials hazarded various guesses at the country's population.[5] By careful examination of these, secondary estimates (i.e. those reporting previous estimates[6]) were excluded, and the rest were plotted against time (Fig. 1).[7] In addition, a population total for 1941 has been calculated from the official urban figures,[8] using the C.R.O. estimate of the percentage of total population living in urban areas, corrected by the ratio given in the 1956 national census.[9]

Fig. 2 shows a backward projection of Iran's population based on Amani's adjustment to the 1956 census and his estimation of population growth rates for various time periods.[10] Also plotted on this graph is a 'perpetual

[1] Ministry of Interior, Department of Public Statistics, *National and Province Statistics of the First Census of Iran, November 1956*. Two volumes: Vol. 1, Tehran, 1961; Vol. 2, Tehran, 1962.

[2] Plan Organization, Iranian Statistical Centre, 'National Census of Population and Housing, November 1966'. Individual reports for each area are presently being published. The figures in this appendix are taken from a 1% sample of results, published in Tehran, May 1967. Sample censuses taken in 1959 and 1963 are considered unreliable.

[3] Quoted in Ministry of Interior, Department of Public Statistics, *National and Province Statistics of the First Census of Iran, November 1956*, Vol. 1, p. 5.

[4] Quoted in Djamchid A. Behnam, 'Conséquences Economiques de la Croissance Démographique dans les pays insuffisamment développés d'après l'exemple de l'Iran', Paris University Thesis, 1959, pp. 89–91.

[5] See source list on Fig. 1 App. I – 1.

[6] When sources of estimates were not quoted, it was usually clear from the statistics whether or not it was an original estimate. The number 15,055,00, for example, appeared as the 'latest official estimate' in a large number of books published between 1933 and 1949.

[7] Original estimates given as a range of values (e.g. 'between nine and 10 million') are shown as such on the graph.

[8] See Note 3 above.

[9] The formula used is $P = U \cdot \frac{100}{u} \cdot \frac{b}{a}$

where P = total population 1941;
U = urban population 1941;
u = urban percentage in total population 1941, from C.R.O.;
a = urban percentage in total population 1956, from census;
b = urban percentage in total population 1956, from C.R.O.

b has been obtained from Djamchid A. Behnam, *op. cit.*, p. 901, and u by extending back the series 1945–55 in the same source.

$$P = 2{\cdot}233\text{m} \cdot \frac{100}{11} \cdot \frac{23{\cdot}0}{31{\cdot}4} \cdot$$
$$= 14{\cdot}87\text{m}.$$

[10] Dr. Mehdi Amani, Associate Professor of Demography at Tehran University, gave me these growth rates based on his own researches:

1900–25	0·2%
1926–45	1·5%
1946–56	2·5%

For his backward projection in Fig. 2 he uses these rates and a corrected 1956 census total of 19·32m, an upward correction of 2·0%.

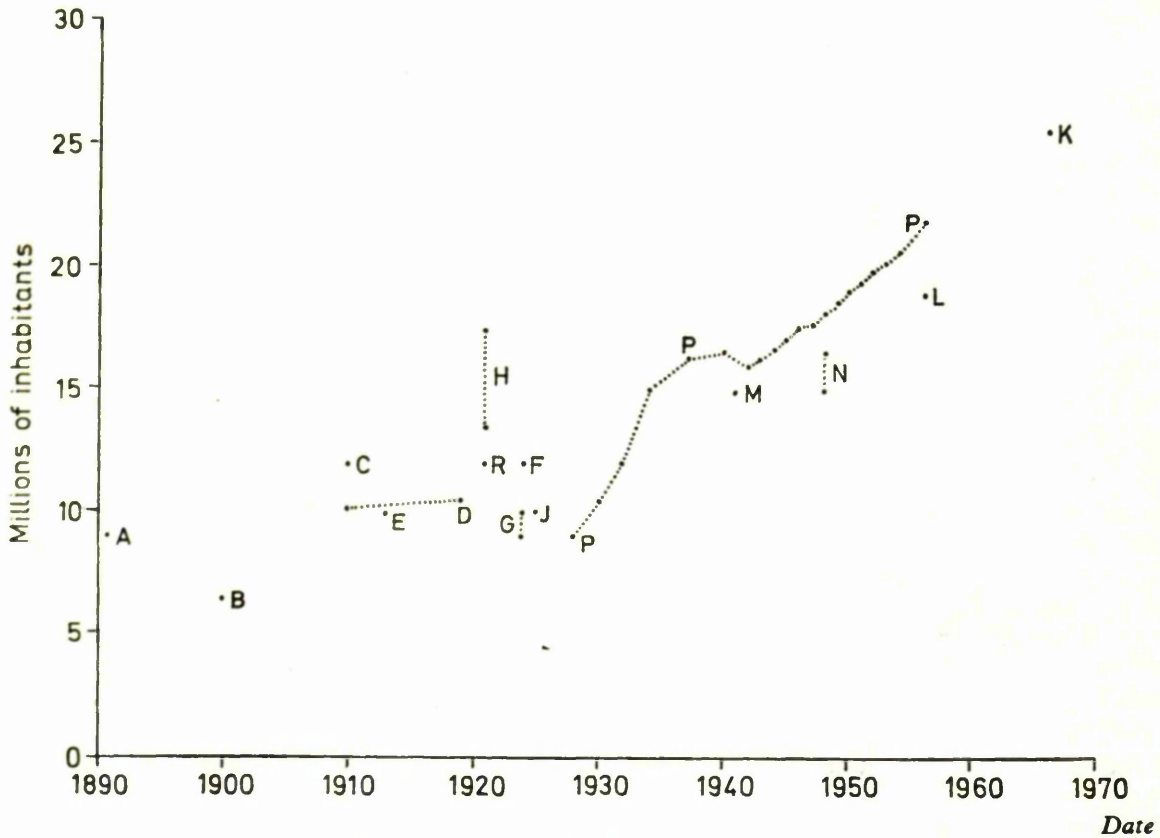

FIGURE 1. *Estimates of the population of Iran*

KEY TO SOURCES:

A – Curzon, G. N., *Persia and the Persian Question* (London: Longmans, Green & Co., 1892), p. 494.

B – Chirol, V., *The Middle Eastern Question* (London: John Murray, 1903), p. 95.

C – Shuster, W. M., *The Strangling of Persia* (London: T. Fisher Unwin, 1912),

D – United Kingdom, Foreign Office, *Persia*, 1919, p. 9.

E – Neligan, A. R., *Hints for Residents and Travellers in Persia* (London, 1914), p. 1.

F – MacCormack, D. W., *Memorandum on Persian Opium* (Tehran, 1924), p. 7.

G – League of Nations, *Commission of Enquiry into the Production of Opium in Persia* (Geneva, 1926), p. 34.

H – Balfour, J. M., *Recent Happenings in Persia* (London: Wm. Blackwood & Sons, 1922), pp. 22–24.

J – Fateh, M., *The Economic Position of Persia* (London: P. S. King & Son, 1926), p. 3.

K – Iran, Plan Organization, *National Census of Population and Housing – Advance Sample Data*, Vol. 3 (Tehran, 1967), p. 1.

L – Iran, Ministry of Interior, *National and Province Statistics of the First Census of Iran*, Vol. 1 (Tehran, 1961), p. 1.

M – Estimate from urban data. See footnote 9 to text.

N – Roberts, N. S., *Iran – Economic and Commercial Conditions* (London: H.M.S.O., 1954), p. 49.

P – C.R.O. statistics quoted by Behnam, D. A., 'Conséquences Economiques de la Croissance Demographique . . .' (Paris University thesis, unpublished, 1959), pp. 89–91.

R – Sheean, V., *The New Persia* (London: The Century Co., 1927), p. 5.

TABLE 1. *The Population of Iran, 1900–66.* (*In millions*)

Year	*Population*	*Year*	*Population*
1966	27·07	1932	12·96
1965	26·30	1931	12·77
1964	25·56	1930	12·59
1963	24·85	1929	12·40
1962	24·15	1928	12·22
1961	23·48	1927	12·04
1960	22·83	1926	11·86
1959	22·19	1925	11·78
1958	21·57	1924	11·69
1957	20·96	1923	11·61
1956	20·38	1922	11·52
1955	19·88	1921	11·47
1954	19·40	1920	11·37
1953	18·93	1919	11·29
1952	18·47	1918	11·21
1951	18·02	1917	11·13
1950	17·58	1916	11·05
1949	17·15	1915	10·96
1948	16·73	1914	10·89
1947	16·43	1913	10·81
1946	15·93	1912	10·73
1945	15·66	1911	10·66
1944	15·43	1910	10·58
1943	15·21	1909	10·51
1942	14·98	1908	10·43
1941	14·76	1907	10·36
1940	14·55	1906	10·29
1939	14·34	1905	10·21
1938	14·13	1904	10·14
1937	13·92	1903	10·07
1936	13·72	1902	9·99
1935	13·52	1901	9·92
1934	13·32	1900	9·86
1933	13·12		

NOTE: Methods of estimation and sources are quoted in text.

inventory of population' calculated from the estimated number of births in five-year periods, assuming a life expectancy of 30 years.[11]

Fig. 3, based on Table 1, indicates the pattern and level of population growth which is considered to be the nearest one can get to the truth.

The defence of my figures in Table 1 must be made in stages. Firstly, in spite of some writers who have suggested that Iran's population was declining in the early part of the 20th century,[12] the growth rate of 0·75% estimated by the widely-travelled Schindler[13] for the years 1875–1910, and extended to 1919 on the basis of a British government study,[14] is acceptable on both historical and demographic grounds.[15]

[11] Data from J-C. Chasteland *et al.*, *La Population de l'Iran; Perspectives d'évolution, 1956–1986*, pp. 239–245. Chasteland himself uses a 30-year life expectancy for the period 1900–35.

[12] See League of Nations, *Commission of Enquiry into the Production of Opium in Persia* (Geneva, 1926), p. 34; also Valentine Chirol, *The Middle Eastern Question* (London, 1903), p. 95.

[13] Quoted in United Kingdom, Foreign Office, *Persia*, confidential handbook, May 1919, p. 10.

[14] See Note 13.

[15] Amani and Chasteland agree with a very slow increase in population at the beginning of the 20th century. Amani suggested the figure of 0·2% – see Note 10. Esfandiar Yeganegi, *Recent Financial and Monetary History of Persia* (New York, 1934), p. 4, puts forward a similar view. Schindler's rate is accepted because of his long experience in Iran during the relevant period.

Secondly, the annual growth rate of 2·3% implied by the C.R.O. statistics between 1946–56 conforms broadly with Amani's 2·5% and the rate quoted by other authors.[16] But because of some evidence of delayed registration of births in a period when the infant mortality rate was declining,[17] the C.R.O. rate is probably low and Amani's estimate is accepted as realistic. Thirdly, the rate of 2·9% determined in the decade 1956–66 by the two national censuses is generally acceptable.[18]

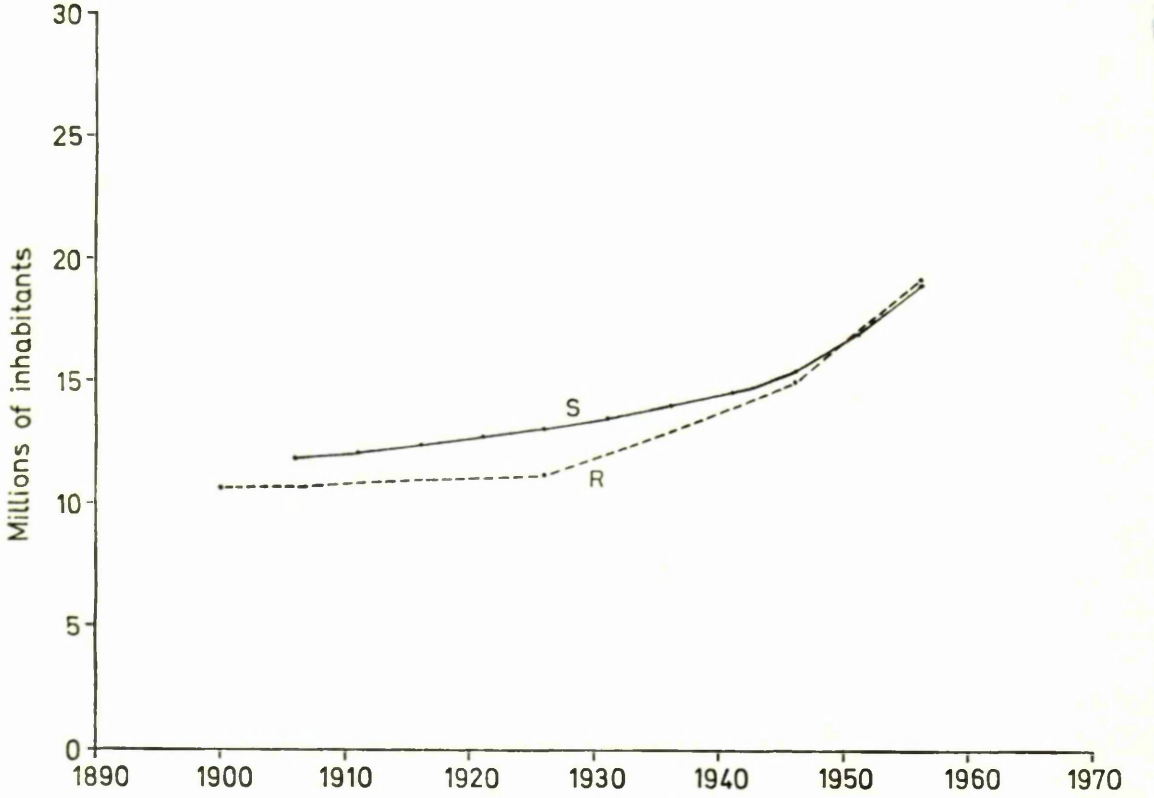

FIGURE 2. *Population of Iran backward projection*

KEY TO SOURCES:

R – Amani's suggested growth rates on corrected 1956 total. See note 10.

S – 'Perpetual inventory of population'. See note 11.

'Perpetual inventory of population'		*Amani retrogression*			
1956	19·06	1956	19·32	1956	19·32
1951	17·00	1946	15·10	1951	17·08
1946	15·55	1926	11·25	1946	15·10
1941	14·69	1900	10·72	1941	14·02
1936	14·09			1936	13·03
1931	13·57			1931	12·11
1926	13·12			1926	11·25
1921	12·73			1921	11·15
1916	12·44			1916	11·04
1911	12·19			1911	10·94
1906	11·95			1906	10·84

[16] H. H. Vreeland, *Iran*, 1955, p. 32; also Adnan Mazarei, *La Province Iranienne du Farsistan*, Geneva University Thesis, 1956, pp. 26–27, figures for one province.

[17] Information by W. Bartsch from experiences at the C.R.O. regarding delayed birth registration. The fact that infant mortality was declining is confirmed by George B. Baldwin, 'Iran's experience with manpower planning', in F. Harbison and C. A. Myers, *Manpower and Education*, (New York, 1965), p. 158, who expects a teenage population boom 1965–70.

[18] Plan Organization, Economic Bureau, 'Economic Development of Iran in Recent Years and Outline of the Fourth Plan', Tehran, unpublished, 1967, p. 2; Edward P. Swan, 'Highlights of the 1966 Census of Iran', Tehran, unpublished, 1967.

It is the period 1920–46, therefore, about which there is most doubt over the rate of population growth. Amani has suggested a rate of 1·5% between 1926 and 1946 – a rate which is in conformity with knowledge of the population structure in 1956.[19] The C.R.O. rate of 2·0% for 1942–45 does not, of course, invalidate Amani's rate, which is an average, and historical evidence points to 1926 and 1946 as turning points in the population growth pattern.[20] Consequently this rate is accepted, and the gap 1920–25 is plugged by extending Schindler's growth rate to the latter date.[21]

The total populations for the two census years, from which the figures in Table 1 are calculated, are also cause for much discussion. The 1956 census total (18·97m) was corrected upwards by 2·6% by Swan,[22] by 2·7% by Zamani,[23] by 4·5% by Bartsch,[24] and by 5·0% by Jamei.[25] The 1966 census is generally thought to be more reliable than its predecessor,[26] Bartsch estimating an undercount of 3·5%,[27] although a post-enumeration survey (taken, albeit, three months after the original census and in urban areas only) suggested an *over*-estimation of 10%.[28]

On purely subjective grounds,[29] I would suggest that these corrections are too small and that the underenumeration in each census was between 5 and 10%.[30] For present purposes, therefore, I am assuming that the 1956 census was underestimated by 7·5% and the 1966 census by 5·0%.[31] (The C.R.O. estimate for 1956 was, in fact, 16% higher than the census figure, though this was obviously inflated to some extent by under-reporting of deaths.[32])

Fig. 4 combines the four previous graphs in an attempt to show how my population estimates for 1900–66 compare with others. The major ill-fitting features of this graph cannot all be satisfactorily explained. The low C.R.O. figures from 1928–33 are presumably due to the teething troubles of a new department, and the bulge from 1934–41

[19] See Note 10 above.

[20] 1926 is the year in which trucks were first used to transport agricultural crops from surplus areas to famine regions. See A. C. Millspaugh, *The Financial and Economic Situation of Persia, 1926* (New York, 1926), p. 10. 1946 is the first year after World War II when Iran began to find its feet again after the Allied occupation, and with the Allied funds accumulated during the war.

[21] These years were years of civil war, famine and little evidence of industrial, transportation or agricultural progress. There is no reason to believe, therefore, that the rate of population growth made any substantial increase in these years.

[22] Edward P. Swan, 'Highlights of the 1966 Census of Iran', Tehran, unpublished, 1967.

[23] S. Zamani, quoted in W. H. Somermeyer, 'First (Preliminary) Report on National Income and Related Statistics in Iran', Tehran, restricted and unpublished, 1962.

[24] W. H. Bartsch, London University Ph.D. thesis in preparation.

[25] A. Jamei, Director, Iranian Statistical Centre, in conversation, October 1966.

[26] Implied in Edward P. Swan, *op. cit.* T. Myatt, U.S. Adviser to the 1966 census, said (16.7.1967) that the collation errors have been specially checked and corrected. My own upward correction for 1966 is 5·0% compared with the 7·5% I have taken for 1956. See below.

[27] W. H. Bartsch, *op. cit.*

[28] The urban Post-Enumeration Survey figures, given to me by B. Bahram, show a total urban population of 8·85m based on a 1 in 400 (2 stages times 1 in 20) sample, compared with the field count of 9·82m.

[29] I was present in Iran (and enumerated) during the 1966 census, and also while the results of the 1956 census were being tabulated.

[30] There is still reason to believe that whole villages have been omitted from both censuses. (In 1966 the specific case was given of central mountain areas which it was quite impossible to reach because of snow.) Also, my personal experience in Iran suggests that the standard of enumerators is not high. (Although many statisticians in Iran believe that the census field enumerators were considerably better than the staff at the Statistical Centre which carried out the belated and inconclusive P.E.S.) The extraordinary sex ratio of 107 males to every 100 females in 1966 is also cause for anxiety about reliability. Mrs. S. Larner, U.S. Advisor to the 1966 census, suggests that this may be due to double counting of polygamously married males (in conversation 15.7.1967) enumerated on a *de jure* basis, but it is more likely to arise from underenumeration of females in a country where girls are often not counted as children.

[31] The corrected totals for these years are given in Table 1.

[32] The C.R.O. statistics are based on the number of identity cards in existence. Until the identity card of a dead person is handed in, he is assumed to be alive. This phenomenon is, of course, offset by delayed reporting of births (see Note 17 above), but there is reason to believe that the number of identity cards in existence was given an unusual boost in the late 1930's. (See text and Note 33 below.) Underreporting of deaths in general is mentioned by W. H. Somermeyer, *op. cit.*, p. 4; Overseas Consultants Inc., *Report on Seven Year Development Plan for the Plan Organization of the Imperial Government of Iran* (New York, 1949), p. 5; and V. Kannisto, 'Final Report; Vital and Health Statistics', Tehran, unpublished and restricted, 1957, p. 3.

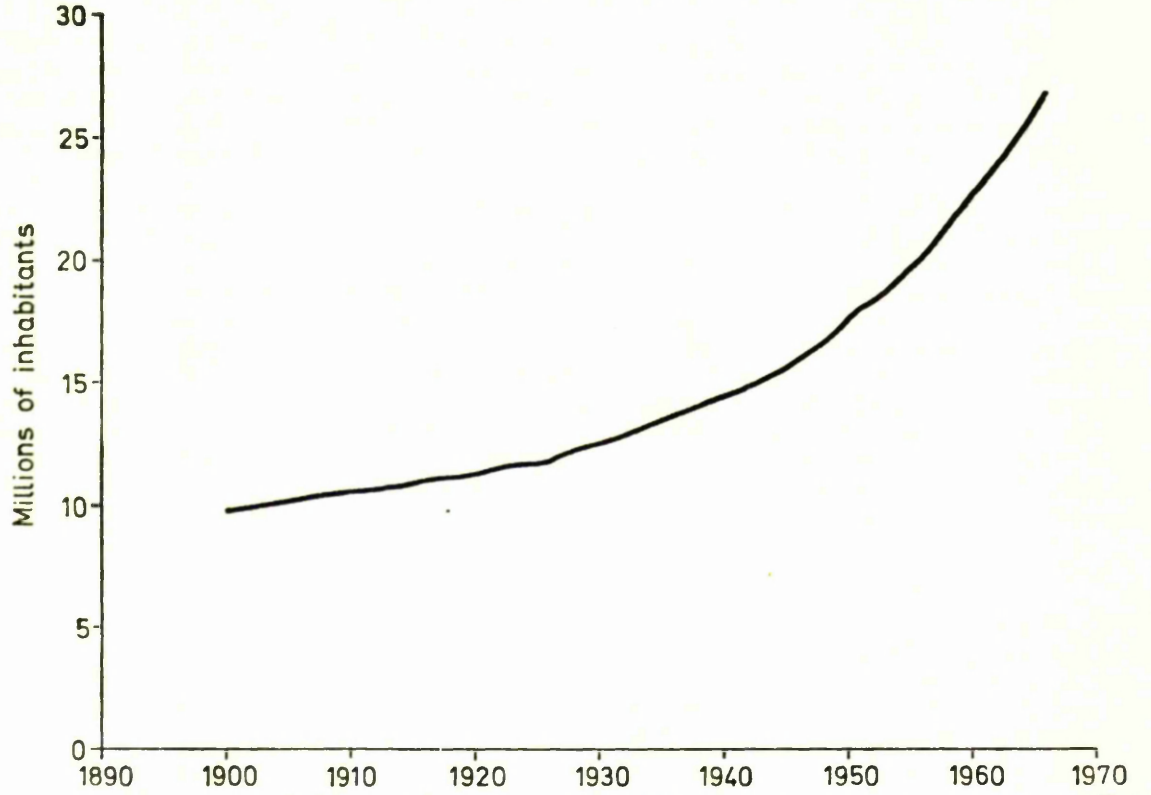

FIGURE 3. *'Best' estimate of population growth for Iran*

SOURCE: Table 1.

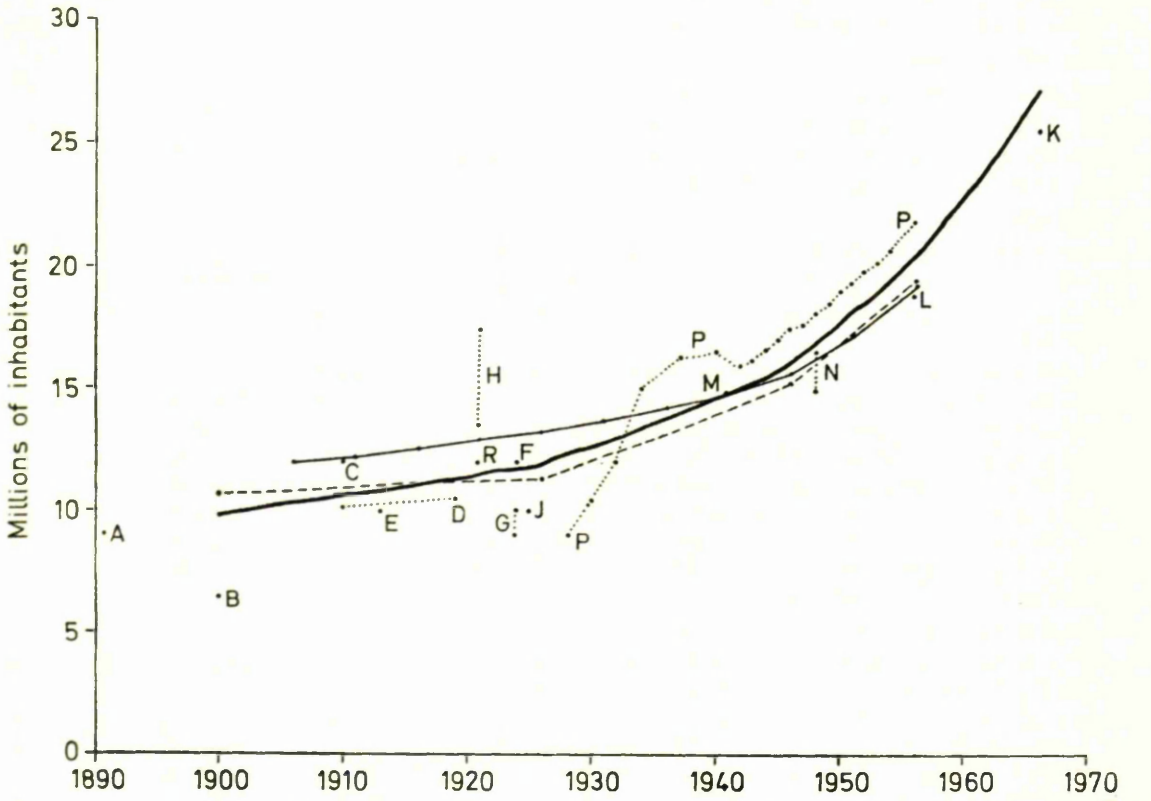

FIGURE 4. *Comparison of different estimates of population growth for Iran*

SOURCE: Figures 1, 2, 3

can be put down to underreporting of deaths because food rations at that time were geared to the presentation of identity cards.[33]

Chirol's estimate of a 6·5m maximum for the 1900 population,[34] and the League of Nations figures of 9–10 millions for 1924,[35] appear to be based on the presumption that the population was shrinking[36] – although the latter did state that this was not necessarily true,[37] in which case a higher total would be implied. But Balfour's estimate ('an honest attempt by an Iranian official')[38] is still far above my total for 1921, and his 'reasoned highest figure'[39] is astronomical.

With these qualifications in mind, my interpretation of Iran's population growth from 1900–66 is given in Table 1 and illustrated in Fig. 3. It is basically a combination of the adjusted census totals of 1956 and 1966 and specified growth rates based on historical evidence and demographic realities. It suggests that the population has increased from just under 10 millions to 27 millions in the 66 years since the beginning of the century.

[33] Information gleaned from officials and friends in Iran.

[34] V. Chirol, *The Middle Eastern Question* (London, 1903), p. 95.

[35] League of Nations, *op. cit.*, p. 34.

[36] League of Nations, *op. cit.*, p. 34., and M. K. Fateh, *The Economic Position of Persia* (London, 1926), p. 3, give the usual Malthusian reasons for sudden declines in population, though without any estimates of population growth or birth rates.

[37] League of Nations, *op. cit.*, p. 34.

[38] J. M. Balfour, *Recent Happenings in Persia* (London, 1922), p. 23.

[39] J. M. Balfour, *op. cit.*, p. 23.